University of Alberta

Predicting Homicide Clearance in Canada and the United States

by

Wendy Caroline Regoeczi

©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

Department of Sociology

Edmonton, Alberta

Fall 1996

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file *Votre référence*

Our file *Notre référence*

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-612-18178-2

Canada

University of Alberta

Library Release Form

Name of Author: Wendy Caroline Regoeczi

Title of Thesis: Predicting Homicide Clearance in Canada and the United States

Degree: Master of Arts

Year this Degree Granted: 1996

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly, or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided, neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.

14 Bridlewood Drive
Dundas, ON
L9H 6H4

August 21, 1996

University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Predicting Homicide Clearance in Canada and the United States submitted by Wendy Caroline Regoeczi in partial fulfillment of the requirements for the degree of Master of Arts.

Dr. R. Silverman

Dr. L. Kennedy

Dr. J. Goldberg

August 20, 1996

ABSTRACT

Beginning in the 1960s, there has been a marked decline in clearance rates of homicides, a finding which has generated little interest among criminological researchers. Those studies which have examined the issue of homicide clearance have focused mainly on the United States. This thesis involves a comparative analysis of homicide clearance in Canada and the U.S. using data generated by the Canadian Centre of Justice Statistics, and the United States Uniform Crime Reports: Supplementary Homicide Reports. Using a hypothetical model, homicide clearance is predicted on the basis of specific victim and offense characteristics. Logistic regression is employed for each of three situations: homicide clearance in Canada versus the United States; the four Maritime Provinces versus four New England States; and Ontario versus New York State. The results indicate that the model is a good fit for homicide clearance in Canada and the United States as a whole. However, in terms of the Maritimes, only the circumstances surrounding the offense emerged as a significant predictor variable, whereas for the New England States, both the circumstances surrounding the offense and race were found to have an impact on the likelihood of clearing a homicide case. The homicide weapon, circumstances surrounding the offense, age, and gender of the victim were found to be significant homicide clearance predictors in New York State, while only the circumstances surrounding the offense emerged as an important predictor variable in Ontario. Implications of these findings and suggestions for future research are discussed.

Acknowledgements

I would like to acknowledge the assistance and support of particular individuals without whom the completion of this thesis would not have been possible.

Foremost, I would like to thank my committee members as a group for their encouragement and flexibility regarding my approach to this topic. Special recognition goes to Dr. Silverman, who not only provided me with both data sets, but whose inspiration and support made writing this thesis a rewarding and enjoyable experience. I wish to thank Dr. Krishnan for his direction concerning the logistic regression, and Dave Odnack for patiently rescuing me from various computer dilemmas. Thanks also to Dr. Riedel and Dr. Cardarelli for supplying some of the key articles composing the literature review. I am also indebted to Dr. Creechan for providing me with reference materials and endless sound advise.

Finally, I would like to acknowledge the encouragement and support of my family, whose continued faith in my abilities I could not have succeeded without. Thanks also to my friends for their endless inspiration and confidence. In particular, I thank Jeff for providing me with the motivation I needed to complete the task at hand.

TABLE OF CONTENTS

Chapter		Page
1	Introduction	1
	Definitions	5
	Data	6
2	Literature Review	13
3	Homicide Clearance Model and Hypotheses	27
4	Methodology	37
	Sample	37
	Measurement	39
	Analyses	43
5	Results	47
	Homicide Clearance in Canada and the United States	47
	Homicide Clearance in the four Maritime Provinces and four New England States	69
	Homicide Clearance in Ontario and New York State	82
6	Conclusion	97
References		122

LIST OF TABLES

		Page
Table 1	Frequency and Percent of Clearance Status in Canada by Victim Gender, Race, and Age	48
Table 2	Frequency and Percent of Clearance Status in the U.S. by Victim Gender, Race, and Age	48
Table 3	Group Means and Standard Deviations of Predictor Variables of Homicide Clearance in Canada	49
Table 4	Group Means and Standard Deviations of Predictor Variables of Homicide Clearance in the U.S.	51
Table 5	Frequency and Percent of Clearance Status in Canada by Weapon and Circumstances of Offense	59
Table 6	Frequency and Percent of Clearance Status in the U.S. by Weapon and Circumstances of Offense	59
Table 7	Logistic Regression Results for the Prediction of Homicide Clearance in Canada	63
Table 8	Logistic Regression Results for the Prediction of Homicide Clearance in the U.S.	66
Table 9	Frequency and Percent of Clearance Status in the Maritimes by Victim Gender, Race, and Age	71
Table 10	Frequency and Percent of Clearance Status in Four New England States by Victim Gender, Race, and Age	72
Table 11	Frequency and Percent of Clearance Status in the Maritimes by Weapon and Circumstances of Offense	76
Table 12	Frequency and Percent of Clearance Status in Four New England States by Weapon and Circumstances of Offense	77
Table 13	Logistic Regression Results for the Prediction of Homicide Clearance in the Maritimes	78
Table 14	Logistic Regression Results for the Prediction of Homicide Clearance in Four New England States	80

		Page
Table 15	Frequency and Percent of Clearance Status in Ontario by Victim Gender, Race, and Age	83
Table 16	Frequency and Percent of Clearance Status in New York State by Victim Gender, Race, and Age	84
Table 17	Frequency and Percent of Clearance Status in Ontario by Weapon and Circumstances of Offense	88
Table 18	Frequency and Percent of Clearance Status in New York State by Weapon and Circumstances of Offense	89
Table 19	Logistic Regression Results for the Prediction of Homicide Clearance in Ontario	91
Table 20	Logistic Regression Results for the Prediction of Homicide Clearance in New York State	94

LIST OF FIGURES

		Page
Figure 1	Determinants of Homicide Clearance	36

INTRODUCTION

Chapter 1

The use of official statistics in criminological research requires an understanding of the so-called 'crime funnel', which emphasizes the discrepancy between the amount of crime occurring in society and officially reported crime rates. In the case of homicide, it can be more readily accepted that most, if not all, of these crimes are detected, reported, and recorded. Furthermore, official statistics on homicide are probably least likely to be affected by changes in police practices. However, particularly in the last several decades, the issue of homicide clearance has become a significant problem demanding greater concern. In defining what is meant by the clearance status of an offense, Silverman, Teevan, and Sacco (1996:60) provide that, "crimes are cleared or 'closed' by apprehending a suspect and laying a charge, or if the police have enough evidence to lay a charge even if the suspect has not been apprehended (cleared by charge), or by some other means (cleared otherwise)." The result is the same in either case: the case is regarded as solved. Importantly, however, although criminal justice statistics indicate a substantial decrease over the past several decades in the percentage of homicides cleared, criminologists have focused very little attention on this topic.

There are a number of reasons why uncleared homicides are deserving of further research. The first is the fact that in both Canada and the United States, there has been a considerable increase in the percentage of homicides in which no offender is arrested. Over a thirty year period from 1961 and 1991, it was observed that uncleared homicides in the United States increased from seven percent to thirty-three percent (Cardarelli and Cavanagh, 1992). Conversely, Riedel and Rinehart (1994) report a decrease in murder clearances in the U.S. from 93 percent in 1961 to 65 percent in 1992. Examining a thirty-two year period in Canada from 1961 to 1993, Silverman and Kennedy (1995) found that the uncleared rate had reached slightly above twenty percent of all homicides in 1993, in comparison to five percent uncleared in 1966. The Supplementary Homicide Reports from 1983 indicate that during that year 18,673 homicides were reported (after the exclusion of justifiable homicides and manslaughter by negligent circumstances), of which 4,987 were incidents in which the offender was reported as unknown (27.7 percent of cases), and 24.1 percent of cases were not cleared by arrest (Marche, 1994).

Second, there is a danger posed to society from individuals remaining at large who have committed homicide. Uncleared homicides in which recidivist offenders are

implicated, such as stranger and felony-related[1] offenders, are especially apt to threaten public safety (Riedel, 1995b). The "at large" status of a substantial proportion of homicide offenders is also likely to affect the value of deterrence resulting from arrest and conviction (Riedel and Rinehart, 1994). As noted by Skogan and Antunes (1979:218/9), "the deterrent effect of the severity of sanctions (using as indicators either statutory maximums or sentences actually imposed) or the impact of court conviction (employing as an indicator the ratio of convictions to crimes known to police) is mediated by the ability of the criminal justice system to identify and apprehend individual offenders in the first place". The importance of clearing an offense is further heightened by research demonstrating the greater significance with respect to deterrence of the certainty of punishment as opposed to the severity (Antunes and Hunt, 1973).

Third, since percentages of uncleared homicides are often equated with police effectiveness, a deterioration in police morale may result from a decline in homicide clearances (Riedel, 1995b). It is significant that clearance is frequently invoked as a measure of police effectiveness. Upon the discovery of a homicide victim, the

---

[1] A felony can be defined as "any offense punishable by death or imprisonment for a term exceeding a year", and is used to distinguish the more serious offenses from the less serious misdemeanors. See Statsky, 1985:319.

police sense pressure from the public to bring forward the killer to justice, and the absence of an arrested offender is generally perceived of as a reflection of their lack of ability to perform their policing functions adequately. Criticism aimed at police forces across both the United States and Canada is growing with the corresponding increase in uncleared rates of homicides and other serious violent criminal offenses. However, it is questionable as to the appropriateness of equating police effectiveness and clearance. Consequently, by exploring the possibility that various victim and offense characteristics are implicated in the likelihood of a homicide being cleared, the potential exists to alleviate some of the blame placed on police through providing evidence as to the importance of other factors which may hinder the clearance of a homicide offense.

Further, higher uncleared rates are equated with a negative perception of society's health. The traumatic episode that is experienced by the victim's family is worsened by the absence of an arrested offender (Riedel and Rinehart, 1994). Finally, the selection of homicide as the offense to be analysed with respect to clearance rates is also significant in so far as the serious and violent nature of these offenses leads police to dedicate a substantial amount of their investigative manpower to solving them. For example, in examining the apprehension activities of the New

York City Police Department, Greenwood (1970) found that homicide cases attained the highest clearance rates, followed by rape, assault, and robbery. The lowest clearance rate was found for the crime of grand larceny. Thus, in comparison to offenses which are perceived of as less serious, or which do not involve bodily harm, it can be more readily accepted that the non-clearance of a homicide will not be due to a lack of attention to the case on the part of the police.

Definitions

A homicide is said to have occurred when one individual kills another. As defined by law, homicides take on a variety of forms according to the level of intent of the perpetrator. The term 'homicide' with respect to this analysis encompasses those killings which would be classified as murder, nonnegligent manslaughter, and manslaughter by negligence.

With respect to this study, clearance refers to those cases in which an offender has been identified. This may involve the arrest of a suspect, laying a charge without apprehending a suspect, or solving the case in some other manner. Clearance does not provide any indication of whether the suspect is at any point tried and convicted for the offense, since a range of other factors come into play in the criminal justice process beyond the arrest of a suspect. As such, the offender in a cleared case is the

individual deemed most probable to have engaged in the killing of the victim.

For the purpose of this analysis, data on homicide clearance for both Canada and the United States are used. Previous research on homicide clearance in Canada indicates substantial variation in clearance rates across provinces (Silverman and Kennedy, 1995). With respect to homicide in the United States, the well-documented over-representation of African-Americans as both offenders and victims of homicide, and the highly uneven distribution of African-Americans across the various regions of the country, urges the inclusion, at least initially, of all homicide cases occurring in the two respective countries, in order to evaluate how well a predictor model of uncleared homicides fits with regard to the different countries. Comparing Canada and the United States as a whole thus permits an exploratory search for contrasts between the two countries in terms of factors affecting clearances.

Data

The design of the study requires the use of two different data sets. The Canadian data used in this research were generated by the Canadian Centre for Justice Statistics, Statistics Canada. This data consists of a compilation of summary police reports concerning homicides occurring in Canada. The data provides information concerning victim and offender characteristics, offense

characteristics, and the clearance status of the offense. Information is also available concerning the apparent motive of the offense, which is based on police assessment. This latter variable, however, requires treatment with caution. Unlike the previous variables, for which direct evidence is generally available when coding information into categories, the motive of the homicide is subjectively interpreted by the officer completing the homicide report. In some cases the motive will be relatively apparent, such as in those homicides which occur during the commission of a robbery or rape. Others have to be implied based on the evidence and information available. For example, as noted by Silverman and Kennedy (1993), there is a tendency among police officers to assign a motive of mental illness to women who kill their children, as this is perceived of by the officers as a violation of the woman's maternal role, leading police to assume she must be insane. Thus, the number of cases accurately assigned to such a motive category is questionable. Consequently, although the data are available to examine a range of homicide motives, the present analysis will focus on those assessed as involving the commission of another criminal act, as this category likely contains the greatest proportion of valid cases.

The U.S. homicide data used in this analysis were generated from the Uniform Crime Reports: Supplementary Homicide Reports (SHR) for the years 1976 through 1992.

Using a victim-level analysis provided a data set of 341,639 cases covering the 16-year period. The SHR provide information concerning victim and offender characteristics, the situation of the offense (the number of victims and offenders involved), and offense characteristics. On the whole, fewer variables are available than in the Canadian homicide data.

The SHR also suffer from limitations. The subjective assessment on the part of police officers concerning the circumstances surrounding the offense is likely also a problem with this data. Furthermore, as noted by Fox (1994), the SHR forms are plagued by too little particularity in circumstance categories (ie. too many cases are coded as "other"). The data also suffers from missing or inaccurate information. Concerning the present research, this is most likely an issue with regard to the classification of the circumstances and weapon where the case involves multiple victims. According to Fox (1994:1), "...if the same offender murders a number of victims, the structure of the data collection form prescribes that the relationship of the offender to the first victim (often chosen arbitrarily) be coded for this offender". However, the data set does not contain many incidents involving multiple victims, and thus this limitation should not significantly affect the current analysis.

Literature examining the reporting of homicide

circumstances has also proposed that there may be variation over time with respect to the rules surrounding circumstance coding, particularly within individual cities (see, for example, Maxfield, 1989). It has also been suggested that the coding rules may vary across cities (Maxfield, 1988). Maxfield (1988), in discussing another problem which arises concerning the coding of homicide circumstances in the SHR, proposes that inconsistency occurs in circumstance coding to some extent as a result of the circumstance categories not being mutually exclusive. He provides the following example to illustrate the possible dilemmas which may arise when coding circumstances:

> Imagine a scene where two acquaintances meet in a secluded alley to share some crack. An argument erupts, becomes violent, and one of the friends is killed. His pockets are emptied and cash taken before the offender flees, leaving behind suspicious implements and traces of crack. The incident is more complicated than can be reflected in a single code for circumstances. It is a robbery, but the theft by force is an afterthought rather than the principal motivation for murder. The killing is drug related in the sense that evidence of recent use was found, and it is reasonable to assume that judgment was impaired, but this is clearly a situation different from deaths due to turf-battles among dealers. (Maxfield, 1988 p.10).

Coding may also be affected by increased police sensitization towards issues such as drug-related crime problems, whereby signs of indirect drug involvement may influence homicide classification (Maxfield, 1988).

As the SHR program operates on voluntary participation

of law enforcement agencies across the United States, reports may be missing of homicides occurring in jurisdictions housing small agencies, or where agencies fail to report homicide data for one or more months in the year, as is known to happen occasionally (Williams and Flewelling, 1988). However, comparisons of SHR homicide data to city police records indicate that in general, at least with respect to large cities, the SHR is essentially complete in terms of case numbers.

Of particular importance with respect to this analysis is the recognition that departments tend to submit SHR reports relatively early on in a murder investigation (Riedel, 1987). When SHRs are filled out and victim-offender information is unavailable, the form indicates that the relationship is "unknown". This is significant, as arrests made later do not always result in updated information being forwarded to the UCR. Consequently, there may be a problem of underreporting of stranger homicides and an overrepresentation of unknown offenders since the victim-offender relationship in these cases is not always immediately evident. Maxfield (1989) also notes a tendency for SHR data to underrepresent stranger murders, as well as those homicides involving drugs and instrumental and property felonies. The author suggests that these misclassifications occur in part as a result of such decisions being made during the initial phase of a homicide

investigation, where police may more readily record incidents as either "unknown", or as those most frequently encountered (which are proposed to be conflict murders occurring between relatives or acquaintances). Nevertheless, as indicated by Riedel (1993), even where homicides involve strangers, 88 percent are cleared within a one-week period. Thus this problem of misclassifications being due to decisions made early on in an investigation is likely not substantial. Moreover, as a result of the dramatic reduction in the likelihood of clearing a homicide after a relatively short initial period, the number of homicides which are later cleared and not reported to the UCR program should have little impact on the current analysis (Cardarelli and Cavanagh, 1992).

This comparative exploratory analysis of uncleared homicides in Canada and the U.S. will be developed through several chapters which form the body of this thesis. The study will commence in Chapter 2 with a review of the literature on homicide clearance. This will be followed in Chapter 3 by a presentation of the predictor model of uncleared homicides that has been developed from existing homicide research, which systematically sets out the hypotheses to be tested in this research. This is succeeded in Chapter 4 by a description of the methodology employed in this study. The results of the analyses are discussed in Chapter 5. The thesis concludes with Chapter 6, a summary

of the findings generated by the research, a discussion of their implications, and suggestions for future research on the topic of uncleared homicides.

LITERATURE REVIEW

Chapter 2

Mainly during the past five years, recognition of the significant problems posed by increasing rates of uncleared homicides has encouraged a small number of researchers to address the topic specifically.

In an examination of arrest clearances for murder, a study by Riedel (1995b:91) indicates that declining murder clearances show trends that are similar to the offenses of rape, aggravated assault, and robbery; "correlations for the 17 years shown range from .82 for murder and rape clearances to .95 for murder and assault clearances." Riedel reviews the research on the role of third parties as facilitators of aggression between victims and offenders, and summarizes the literature implicating characteristics of police activity or organizations in rates of murder clearances. In his discussion of the importance of informants in clearing murders, Riedel suggests numerous situations and motives that reflect the likelihood that an informant will volunteer or withhold information, such as fear of retaliation, dislike for police, or a strong sense of justice. Noting the acute lack of descriptive information available on murder clearances for major U.S. cities, Riedel proposes that the limited data which does exist indicates that national trends are not duplicated. Arguing that missing data is the chief methodological issue in terms of increases

in uncleared murders, Riedel asserts that homicide research is prone to substantial bias due to the situation that roughly one-third of cases are missing offender-related variables. The author emphasizes the need for patterns of missing data to be analysed simultaneously with those of nonmissing data.

In their examination of uncleared homicides in the United States, Cardarelli and Cavanagh (1992) establish that percentages of uncleared homicides are greatest in the northeastern region of the U.S., and in municipalities with populations over 500,000. Their investigation of the relationship between victim characteristics and clearance rates reveals that clearance rates are highest for African-Americans, and lowest for Hispanics and those over 65 years of age. Consistent with previous research, the authors observe that homicides between family, friends and acquaintances are overwhelmingly cleared, with 98 percent resulting in an arrest. Moreover, greater than eight out of ten stranger homicides are also cleared by arrest. They also found that 95 percent of all homicides that are uncleared have been signified by police as involving strangers, or are of unknown relationship. Percentages of stranger homicides are demonstrated to be related to city size, with 75 percent of all identified stranger-homicides occurring in cities with populations greater than 100,000. Their data further indicate that homicides which are the

outcomes of arguments and interpersonal conflicts are declining, whereas those in which circumstances surrounding the death are unknown increased 225 percent. They found only slight increases in felony and non-felony related homicides, while suspected felonies are now only a negligible proportion of all homicides. They indicate that between 1976 and 1989, 37 percent of all uncleared homicides involved felony and suspected felony-type homicides. Significantly, fewer than five percent of homicides resulting from arguments remain uncleared. Looking at stranger-homicides specifically, the authors observe that close to 60 percent are believed to have resulted from a felony or suspected felony. In nearly four of every ten incidents, robbery and rape-related homicides are not cleared. In 54 percent of uncleared homicides in which there is an unknown relationship, the alleged circumstances[2] are also unknown.

Riedel and Rinehart (1994), in an examination of murder clearances with respect to victim and event characteristics, conclude that nonfelony murders are cleared considerably more often than murders involving concomitant felonies. Using data from 3,066 single-victim murders in Chicago from 1987 through 1991 obtained from the Victim Level Murder

---

[2] The term 'circumstances' refers to the situation or events leading up to the occurrence of the homicide. Examples include arguments, revenge, gangland killings, and murders occurring during the commission of another criminal offense, such as a robbery or rape.

file, the authors examine the relationship between victims' age, race, gender, weapon, and circumstances of the homicide, and whether a murder is cleared. They show that, in predicting whether a murder is cleared, victim age, gender, race, and weapon provide very little information that would reduce the proportion of error. With respect to age, 40.3 percent of cases in which the victim is over age 64 are uncleared, while 3.6 percent of cases in which the victim is under age ten are uncleared. In the case of those aged 65 and over, even when circumstances are known, these cases are disproportionately uncleared. Age is shown to interact with the relationship between circumstances and clearance status, such that as individuals get older, changes in their lifestyles increase their likelihood of being involved as a victim in a felony. Not surprisingly, 57.6 percent of felony murders are uncleared in comparison to around ten percent of nonfelony murders. Examining the specific offenses which produce the category of felony murders, it is observed that high frequency felonies (suspected felonies, robberies, and murders related to narcotics) are more likely to be uncleared (63.1 percent) than the lower frequency felonies such as burglary, arson, and sex offenses (excluding rape)(28.9 percent). Comparing high frequency nonfelonies (arguments, arguments over money and property, and other "nonfelony" murders) and low frequency nonfelonies with clearance status reveals very

little association. The circumstances surrounding a homicide are shown to have a very significant impact on the likelihood of a murder being cleared; introducing controls of victim race, gender, and weapon generates little additional explanatory power.

In their exploratory study of uncleared homicides in Canada and the United States, Silverman and Kennedy (1995) note that the uncleared homicide rate in the U.S. is almost six times that of Canada, whereas the overall homicide rate is between three and four times higher. This is considered to be consistent with research demonstrating that the U.S. has considerably higher proportions of stranger homicide, while in Canada more intimate victim/offender relationships are prevalent. Looking specifically at Canada, the authors discover that the proportion of uncleared homicides varies by province. Uncleared homicides reach proportions as high as 40 percent in Quebec and 30 percent in British Columbia, both of which are significantly higher than any other province or area. This pattern persists even when province specific clearance rates are examined[3]. There are high proportions of uncleared homicides in both Montreal and Vancouver, and to a much lesser extent in Toronto. Flourishing drug trades and Quebec's organized crime

---

[3] Clearance rates that are province-specific account for the different population bases of the provinces.

activity are offered as possible explanations for the high uncleared rates in these provinces. Regarding the characteristics of the victim, clearance rates are found to be higher for Native Canadians, and for females. Divorced and single victims have the lowest cleared rates with respect to marital status. Homicide clearance did not appear to be affected by weapon (except in Quebec) or by age of the victim.

A study by Rinehart (1994) purports to investigate murder clearances in Chicago between 1981 and 1991 in an effort to establish how clearance is related to police organizational and murder event situational variables. This study reveals that the strongest predictor of whether a homicide will be cleared is the victim-offender relationship. More specifically, relationships designated as involving family members reveal a strong positive effect on homicide clearance, in contrast to homicides where the relationship is unknown, which have a strong negative effect on clearance. A total of 97.8 percent of cases remained uncleared where the homicide involves a relationship between the victim and offender that is unknown. Removing the victim-offender relationship variable from the equation indicates that the next most significant predictor of murder clearance is whether the homicide is known to involve a felony. The aggregate data show that 52.8 percent of homicides involving a known or suspected felony are cleared,

whereas 81.6 percent of homicides not known to involve a felony are cleared. Breaking the categories down further into felony/suspected felony homicides versus homicides not involving a felony, and those homicides where there is no speculation as to the involvement of a felony, the circumstances surrounding the offense are found to account for 27.9 percent of the variance in clearance status. Clearance occurred in 94.1 percent of homicides which did not involve a felony. The findings also indicate the existence of a relationship between weapon and clearance, where clearance is less likely to occur in homicides involving the use of a gun, although this distinction is found to be stronger in earlier than later years of the data. With respect to homicides involving a concomitant felony, the smallest percentage of uncleared homicides is found for homicides between family members (3 percent), followed by acquaintances (14.6 percent), strangers (40.3 percent), and those of unknown relationship (48.2 percent). The implication of this finding, as noted by Rinehart, is that the occurrence of homicides between individuals who are related are more likely to be the outcome of a lover's quarrel, brawl, or other argument, than of a rape, robbery, narcotics related interaction, or other similar circumstances.

On an individual case level, Rinehart (1994) also examines a range of police variables which she suggests may

potentially impact on murder clearance. These variables are comprised of manpower levels and allocation, officer demographic variables, requirements for recruits, police-citizen relationship (as indicated by misconduct complaints), degree of centralization, specialization, supervision levels, orientation of the department, and relationships between detectives and patrol. A descriptive examination of these variables, which constitutes the qualitative component of the analysis, is achieved through an informal method of data collection, consisting of Chicago Police Department archival data and personal knowledge acquired from Chicago Police Department Administrators. This section of the analysis is based on the assumption that consistent levels of murder clearance co-existing with major changes in police organization would be indicative of a nonsignificant contribution of these factors to murder clearance. Consequently, Rinehart suggests that the variation between 1981 and 1991 of the police organizational factors of detective power (and tentatively patrol manpower), case volume, access to technology, police-community relations, non-white composition of the force, and percent of female sworn officers, denotes that these variables do not have a substantial effect on the clearance of murder cases. Another tentative conclusion drawn by Rinehart concerns the police organization-related variable of the overall volume of murder cases. In particular, "when

volume of cases was plotted against the percentage of murder clearances, an upward trend in case volume for the years 1988-1991 was observed, while case clearance shows a downward trend for the years 1989-1991," (Rinehart, 1994:87). The author suggests that this trend generates support for research implicating high workloads in the occurrence of low productivity. Looking specifically at police manpower, the data indicate that the 4 p.m. to 12 a.m. shift have greater levels of manpower, a larger volume of cases, and a higher proportion of clearances than either the 12 a.m. to 8 a.m. or 8 a.m. to 4 p.m. shift. As noted by Rinehart, this last finding stands contradictory to the earlier noted yearly trend suggesting a correlation between a greater number of cases and personnel, and lower clearance percentages.

In an article on murder, Riedel (1995a) offers various explanations for the decline in murder clearance rates in the U.S. from 93 percent in 1961 to 67 percent in 1991. At the outset, he argues that family-related murders, as a proportion of all murders, have declined to 15 percent in 1989 from 27 percent in 1976, which indicates a simultaneous decline in murders that can be easily cleared by arrest. Moreover, while family-related murders are declining, it is the types of murders that are more problematic to clear which endure. This is because of difficulties such as a lack of eyewitnesses or willingness to cooperate with

police, as is the case in large numbers of stranger murders. Furthermore, the nature of murder has changed as a result of a significant rise in teen violence. For example, there was an increase of 154 percent in homicide rates of 15-19 year-old males, and a 76 percent increase in the homicide rate of 20-24 year-old males, in the United States between 1985 and 1991. Relating these increases in teen homicide to uncleared murder rates, Riedel cites Alfred Blumstein, who suggests that the rise may be the result of more accessibility of guns to youths who are increasingly being recruited into drug markets. Noting a rapid growth in the mid-1980's of crack markets, Blumstein (1995:6) argues that, "to service that growth, juveniles were recruited, they were armed with guns that are standard tools of the drug trade, and these guns then were diffused into the larger community of juveniles." Violence culminating in murder may be connected to rates of uncleared homicide through this illicit drug industry.

With respect to the role of police in clearing offenses, Greenwood et al. (1977) argue that department-wide arrest and clearance rates do not constitute reliable indicators of the effectiveness of police investigative procedures. From their analysis of the criminal investigation process, these authors conclude that, for the most part, clearances are the result of patrol officers' activities, of the obtainability of identification of the

offender at the crime-scene, or of routine police operations. They further conclude that clearance rates are more accurately thought of as a reflection of the behaviour of patrol officers and citizens than of investigators. Moreover, the findings gleaned from their analysis indicate that the most significant determinants of the clearance and arrest rates of a particular department are the size of the department, the region of the country in which it is located, and the crime workload of the department (number of reported crimes per officer). Variables not found to be related to clearance rates include the extent of investigative training, staffing, procedures, and organization. Importantly, behaviour on the part of members of the public is found to profoundly affect the fate of cases.

The importance of citizen cooperation with respect to clearance by arrest is also noted by Reiss (1971), who argues that investigative activities on the part of detectives are generally contingent upon locating a known offender as opposed to pursuing leads to determine the identity of a suspect. Concerning the ability of police to apprehend offenders, Skogan and Antunes (1979) argue that one significant determinant in this regard is information. More specifically, they suggest that the deficiency of information in a large number of cases, combined with the practical invisibility of many (but less) cases to official

inspection, sets limits on the possibility of police action.

In a discussion of the role of third parties with respect to offense clearances, Riedel (1994) proposes that the arrest of an offender and clearance of an offense are contingent upon whether police become aware of relevant and helpful information. Fundamental to this process are informants, defined as any third party supplying knowledge that aids in the clearance of an offense by arrest, which extends beyond police informants to encompass co-participants, significant others, bystanders, neighbours, medical personnel, or ordinary people who notice anything significant while carrying out their daily routines. Riedel notes the importance of eyewitness testimony and the reports of others in terms of clearing offenses. In commenting on the unique nature of homicides with respect to the role of the victim in solving a crime, the author denotes that in the case of murder, a greater amount of information can be gleaned from informants concerning the occurrence of a homicide than from the circumstances surrounding the murder. There is a high level of reporting of homicides due to the existence of moral, medical, and aesthetic beliefs about dead human bodies. Importantly, Riedel suggests that there is a greater likelihood of both the availability of informants and their availability in larger numbers in dispute related homicides as compared to those involving predatory violence, such as robbery homicides. This pattern

is proposed to be the result of the necessity in successful robberies of controlling individuals at the robbery location, such that approaching the designated site will occur at a time when fewer people are present. This finding is significant in light of evidence indicating the importance of whether a homicide involves another felony in terms of the likelihood of the offense being cleared (see, for example, Riedel and Rinehart, 1994). Riedel also proposes that the largest hindrance experienced by modern-day urban police in terms of clearing homicides is some form of fear of retaliation. He further maintains that homicides which pose a difficulty concerning clearance may invoke the use of police informants (ie. snitches), who compose a group of individuals who may exchange knowledge about a homicide in order to elude prosecution for minor crimes. Riedel concludes that the role of informants implies that altering investigative practices and police organization as an attempt to increase homicide clearances will only be moderately effective. Instead, he emphasizes the need to further our understanding about the circumstances which affect the likelihood of informants providing information concerning homicides, in an effort to develop new strategies to promote cooperation and legislation aimed at preventing retaliation and safeguarding informants.

The conclusions of the existing literature on homicide clearance are varied. Furthermore, much of the research is

essentially descriptive in nature. Finally, although patterns of homicide clearance in both Canada and the United States have been examined, to date no comparative analysis exists of these diverse trends. The current study proposes to fill this gap.

HOMICIDE CLEARANCE MODEL AND HYPOTHESES

Chapter 3

Research on homicide has pointed to the significance of several variables with regard to whether an offense will be cleared. On the basis of this literature, I have developed a model for predicting homicide clearance, which seeks to integrate these previous findings. This model incorporates the variables gender, race, age, weapon, and circumstances surrounding the offense.

Gender

Studies of homicide consistently demonstrate a significant association between gender and criminal homicide, whereby males are predominantly the offenders and the victims of homicide (Block, 1986; Miller, 1983; Riedel, Zahn, and Mock, 1985; Silverman and Kennedy, 1993; Wilbanks, 1984; Wilson, 1993; Wolfgang, 1958; Zahn and Sagi, 1987). Since males make up a substantially larger proportion of homicide offenders and victims, one may expect a similarly unequal distribution in rates of uncleared homicides. In Wolfgang's study of homicide in Philadelphia, three-quarters of the victims in the unsolved homicides were male (Wolfgang, 1958). A study by Hazlett and Tomlinson (1987) of two southern U.S. states found that the offender was unknown in cases involving female homicide victims in 14.2 percent of cases in Alabama, and 25.1 percent of cases in Texas.

It is also arguable that females will be under-represented as victims of uncleared homicides in light of a significant body of literature indicating that, of all female victims, the smallest proportion are murdered by someone not known to them (Browne and Flewelling, 1986; Hazlett and Tomlinson, 1987; Miller, 1983; Silverman and Kennedy, 1993; Wilbanks, 1984). There are implications for homicide clearance in evidence indicating a low rate of female homicide victimization by strangers in so far as clearing stranger homicides by arrest is more difficult for police. Wilbanks (1984), for example, found that women were less likely to be the victim of a stranger homicide than men (19.0 percent compared to 30.2 percent). In their analysis of American homicide, Riedel, Zahn, and Mock (1985) found a predominance of male victims in acquaintance and stranger homicides, who constituted more than 80 percent of the victims in these categories. Finally, Silverman and Kennedy (1987) indicate that males are three times more likely to be murdered by a stranger than females. As a result, I predict that male victims will constitute a higher proportion of victims of uncleared homicides.

Race

Studies of U.S. homicide consistently reveal a disproportionate number of African-American offenders and victims (Block, 1986; Curtis, 1974; Farley, 1980; Lundsgaarde, 1977; Riedel, Zahn, and Mock, 1985; Wilbanks,

1984; Wolfgang, 1958). Concerning the relationship between race and homicide clearance, in Wolfgang's Philadelphia study, of the six percent of cases that were unsolved, just over one-half of the victims were white (Wolfgang, 1958). Marche (1994) has suggested that homicide solutions may be increased where the victim is white due to greater resource allocation in these cases as compared to nonwhite victims. However, examining unsolved cases in Chicago from 1965 to 1981, Block (1986) found that the proportion of unsolved cases for various types of felony-related homicides did not vary according to the victim's race.

Due to the unique racial make-up of the Canadian population, the variable of race is necessarily different for Canada than for the U.S. In Canada, the Native Canadians are used as a comparison population for whites (see, for example, Silverman and Kennedy, 1993). In their study of uncleared homicides, Silverman and Kennedy (1995) found higher clearance rates for Native Canadians than for whites, which they suggest is due to the homicides of Natives being predominantly family- and alcohol-related, and occurring on Native reserves. The results of a study by Doob, Grossman, and Auger (1994) on aboriginal homicides in Ontario denote a greater likelihood of being killed by a family member for male aboriginal victims (both on- and off-reserve) than for non-aboriginal victims. This finding is consistent with research by Strang (1991) on homicide in

Australia, in which no Aboriginals in the study were found to be victims of stranger homicides, yet close to half were killed by their spouses. Therefore the likelihood that whites compose a substantial proportion of the victims in stranger and acquaintance homicides may reflect a greater probability of white victims in uncleared homicides. Consequently, I predict that the greatest proportion of victims of uncleared homicides will be white.

Age

Although there is slight variation in previous literature as to the age group with the highest risk of homicide victimization, the general trend shows that victims are typically slightly older than offenders (Block, 1986; Curtis, 1974; Riedel, Zahn, and Mock, 1985; Silverman and Kennedy, 1993; Wolfgang, 1958; Zahn and Sagi, 1987). As stranger homicides are probably the least likely to be cleared by arrest, it is significant that women, children, and the elderly have been found to be more susceptible to stranger victimization (Riedel, 1995c). Wolfgang (1958) found that individuals 65 years of age and older are four to five times more often victims in unsolved than solved cases. Examining data on homicides in Dade County, Wilbanks (1984) found that homicides where the victim is 65 or over have a clearance rate of only 46.9 percent. Silverman and Kennedy (1993) found that elderly people are killed by strangers in forty-three percent of cases. They suggest that this may be

because the elderly are more vulnerable to theft since they frequently live alone, and because their daily routines, which are carried out mainly in the home, may result in unexpected encounters with burglars. This finding is consistent with research by Maxfield (1989), who found that a disproportionate number of elderly victims were involved in instrumental homicides[4], and whose data also indicates that the elderly are disproportionately victims of strangers and "unknown" assailants. Maxfield (1988), in a study of homicides occurring in the U.S. between 1976 and 1985, also found a disproportionate number of elderly victims in homicides associated with instrumental felonies. Miller's (1983) study of murder in Illinois between 1973 and 1982 further reveals that elderly victims (in this case aged 60 and over) have a greater probability than any other age group of becoming a homicide victim during the commission of another offense.

Cardarelli and Cavanagh (1992:7) interpret their finding that in 33 percent of homicides involving victims 65 years of age and older no relationship between the victim and offender is indicated with respect to the fact that, "many of the nation's elderly reside in large urban areas where they may be isolated from the wider community and easy prey for criminal victimization." According to Block

---

[4] Instrumental homicides are those which occur during the commission of another violent offense against the person, such as a robbery or sexual assault.

(1986), the elderly are especially vulnerable to becoming a victim of an arson homicide. In a study of relational distance and homicide, Silverman and Kennedy (1987) found that 37 percent of victims over 65 years of age are killed at the hands of a stranger, of which 30 percent occur during the commission of another crime. Riedel (1994) proposes that the limited interaction of many elderly persons may also be a factor in homicide clearance. As individuals age, interaction with others tends to be confined to long standing friends, spouses, and family members. This pattern may be significant in the sense that limited interaction on the part of a homicide victim will deplete the amount of information available to police. I therefore predict that victims aged 65 years and over will be disproportionately represented within the category of uncleared homicides.

Weapon

Previous research has demonstrated the relation of certain kinds of weapons to particular types of homicide (Gillis, 1986; Silverman and Kennedy, 1987; Wolfgang, 1958; Zahn and Sagi, 1987). One study of homicide in nine major U.S. cities found that stranger and acquaintance homicides involve the use of guns in 66.7 percent to 67.8 percent of cases, compared to 51 percent in family-related homicides (Zahn and Sagi, 1987). The use of handguns in the U.S. has been found to increase according to the remoteness of the victim/offender relationship, such that handguns are used

most often in stranger homicides and least in family homicides (Riedel, Zahn, and Mock, 1985). An opposite pattern emerged in this same study with respect to the use of long guns. In other studies this difference is evident but less pronounced (see, for example, Riedel and Przybylski, 1993). The findings of Silverman and Kennedy (1987) suggest that handguns are the most frequently used weapon in stranger homicides in Canada. Wolfgang (1958) found that, among victims murdered during the commission of another felony, the most common means of committing the homicide was shooting. Gillis (1986) proposes that, although guns are the principal weapon used in both primary group and unsolved homicides, rifles and shotguns are most often used in cases involving domestic and other primary relationships, whereas a significant number (38.5 percent) of guns used in homicides that are unsolved or involve socially distant victims are handguns and sawed-off rifles and shotguns, which are restricted by Canadian law.

The climbing rate of uncleared homicides in the U.S. may in part be a product of the increasing use of guns in homicides in the U.S. For example, Farley (1980) reports that between 1960 and 1975 the employment of guns in all homicides increased from 55 percent to 67 percent. Furthermore, evidence suggesting a much greater use of firearms as homicide weapons in the U.S. than in Canada may provide a partial explanation as to the greater uncleared

homicide rate in the former, should support be generated for the hypothesis that homicides involving guns are more likely to be uncleared (see, for example, Sproule and Kennett, 1989). I predict that the largest proportion of uncleared homicides will involve the use of a gun.

Circumstances Surrounding the Offense

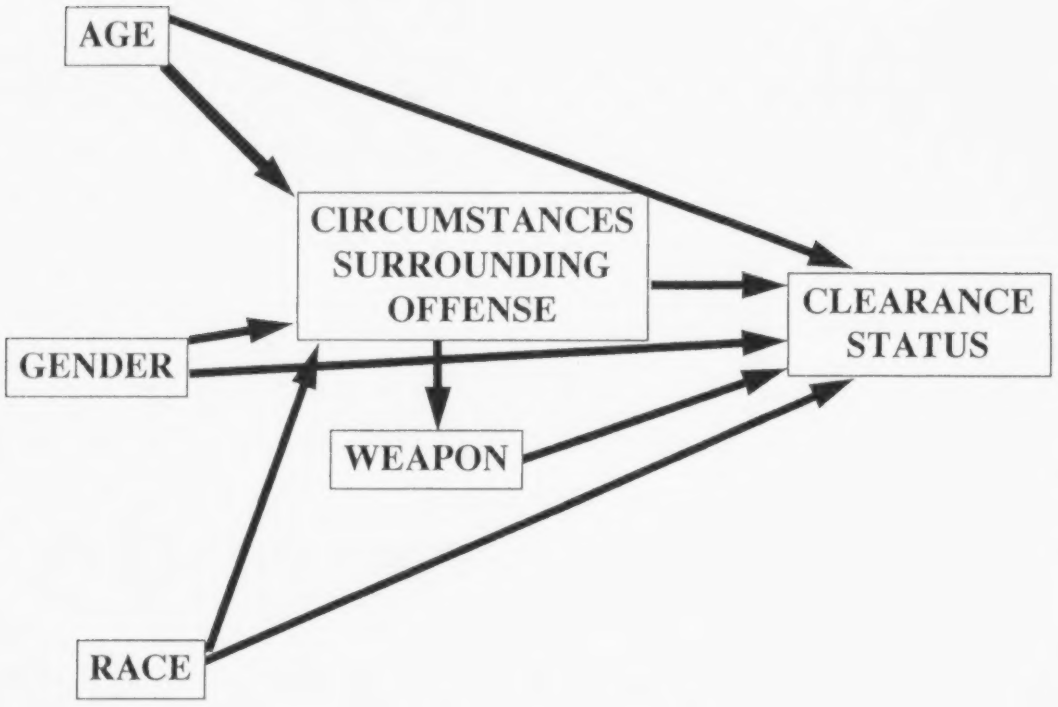
The finding by Riedel and Rinehart (1994), which suggests that the most significant variable in predicting whether a murder will be cleared is whether it is a felony homicide, is supported by research indicating that in stranger non-felony homicides, 89 percent are witnessed by at least one person (Zahn and Sagi, 1987). A greater likelihood of homicides remaining uncleared where another criminal act was transpiring at the time of the murder is further substantiated by the findings of Cardarelli and Cavanagh (1992) and Rinehart (1994), who found a disproportionate number of felony homicides in the uncleared category. Wilbanks (1984) found that, in connection with decreasing rates of cleared homicides in Dade County, increases were found in the types of homicides with lower rates of clearance, specifically cases involving drug rip-offs and robberies. Riedel, Zahn, and Mock (1985) found that between 1973 and 1978 in the U.S., 32 percent of stranger homicide cases were found to involve a concomitant robbery. Their study also indicates that stranger homicides, and those in which the victim/offender

relationship is unknown, have the strongest association with felony circumstances. Furthermore, as compared with stranger homicides, a slight tendency was found for rape and narcotics cases to be linked to those of unknown victim/offender relationship. Riedel (1987) suggests that there may be increases occurring in stranger robberies that result in homicide, which may partly account for possible increases in stranger crime. Importantly, felonies such as rape and robbery, which may culminate in murder, have an inherent hit-and-run nature, resulting in fewer police arrests at the crime setting (Black, 1970). Consequently, I predict that victims who are murdered during the commission of another offense will be disproportionately represented in uncleared homicides.

From this model, displayed in Figure 1, I have derived the following five hypotheses:

1. **Victims of uncleared homicides are more likely to be male.**
2. **Victims of uncleared homicides are more likely to be white.**
3. **Victims of uncleared homicides are more likely to be 65 years of age and older.**
4. **Victims of uncleared homicides are more likely to be murdered with a firearm.**
5. **Victims of uncleared homicides are more likely to be murdered during the commission of another offense.**

FIGURE 1
DETERMINANTS OF HOMICIDE CLEARANCE



METHODOLOGY

Chapter 4

Sample

The data for this study were derived from two different sources, as was discussed in the introduction. The Canadian data were generated by the Canadian Centre for Justice Statistics, Statistics Canada. These homicide data cover the years 1961 to 1983, providing a data set of 9642 cases. The U.S. homicide data were generated from the Uniform Crime Reports: Supplementary Homicide Reports (SHR) for the years 1976 through 1992, resulting in a data set of 341,369 cases. In both instances, the analyses were carried out using victim-level data. Although the U.S. and Canadian homicide data do not provide information covering identical time spans, data covering the eight years between 1976 and 1983 are supplied in both data sets. The availability of homicide data for the two countries precluded using exactly the same years in the comparison. Nevertheless, potential difficulties that could arise from the use of incongruous data sets should be offset by the presence of long term trends.

This study employs parallel analyses of the Canadian and U.S. homicide data. This method is partly in response to the fact that studies of uncleared homicides to this point have reached inconsistent conclusions. For example,

Riedel and Rinehart (1994) found that victim age, gender, race, and weapon do little to reduce the proportion of error in predicting whether a murder is cleared. In contrast, the study of uncleared homicides in Canada by Silverman and Kennedy (1995) suggests that clearance rates are higher for certain races (ie. Native Canadians) and for females. It is proposed that by engaging in comparative analyses of uncleared homicides in Canada and the United States, it will be possible to determine whether different variables are statistically significant with respect to homicide clearance for the two countries. This comparison could potentially highlight possible explanations for the higher uncleared homicide rate in the United States than in Canada.

The initial analyses included all homicide cases reported for the two countries during the time periods available, in order to search for the existence of factors which distinguish between Canada and the U.S. in terms of uncleared homicides. The data were analysed further during a second stage, where the purpose was to determine whether contrasts exist between demographically similar areas of Canada and the U.S. As countries, Canada and the United States are very distinct in their racial composition. In an effort to control for the effects of the race variable, which has a fundamental impact on the level and distribution of homicide in the United States, particular states were chosen to be analysed which are more similar in their racial

composition to the Canadian provinces than could be achieved with the use of all of the American states. Consequently, the second stage involves a comparative analysis of Nova Scotia, New Brunswick, Newfoundland, and Prince Edward Island versus Maine, New Hampshire, Vermont, and Rhode Island.

The final stage of the analysis involves an analytical comparison of Ontario and New York State. The selection of these two areas was based on comparing demographically dissimilar regions. According to the 1995 U.S. Census statistics, New York State has the largest African-American population of all states in the U.S. (U.S. Bureau of the Census, 1995). Furthermore, the ratio in this state of whites to non-whites (African-Americans, American Indians, Eskimos, Aluets, Asians, and Pacific Islanders) approaches three to one. In Ontario, of the total population in 1991 of about 10,084,000 (Statistics Canada, 1992), approximately 1,411,000 are visible minorities (Statistics Canada, 1995). Despite being home to more than half of Canada's visible minority population, Ontario is still largely white in its racial composition. Thus, the two regions under investigation at this stage have diverse constitutions in terms of race.

Measurement

The dependent variable of clearance status was dichotomized into cleared homicides and uncleared homicides.

With respect to the Canadian data, this involved collapsing the categories of "cleared by charge", "cleared otherwise" and "cleared by suicide" into a single category of "cleared homicides". The remaining category of "unsolved" was relabelled as "uncleared homicides".

The SHR do not provide clearance categories for homicide offenses such as those available in the Canadian data set. However, the variable labelled "situation of offense" provides two categories which would indicate that the homicide case is uncleared. These categories are labelled as "single victim/ unknown offender(s)" and "multiple victims/unknown offender(s)". These categories were combined to create a single category of uncleared homicides. The remaining four categories of "one victim/one offender", "one victim/multiple offenders", "multiple victims/one offender", and "multiple victims/multiple offenders" were collapsed into one category, labelled "cleared homicides". For the purposes of this research study, uncleared homicides with respect to the U.S. data refer to murders where the offender is unknown.

The independent variables are the five predictor variables: victim gender, age, race, means of offense, and apparent motive/circumstances. Both data sets contain these variables. For the purposes of analyses, the age variable was collapsed into the following six categories: less than 10 years, 10 to 19 years, 20 to 29 years, 30 to 49 years, 50

to 64 years, and 65 to 97 years. This breakdown corresponds to that used by Riedel and Rinehart (1994) and Cardarelli and Cavanagh (1992).

In the Canadian data set, the gender of the victim is coded as 1="male", 2="female" and 3="unknown". This variable was recoded, leaving the male category as it was but recoding female as 0 and the unknown category into missing values. The race of the victim is categorized as Caucasian, Negroid, Mongoloid, Canadian-Indian, Eskimo, and Metis. Race was recoded into a dichotomous variable so that 1="Caucasian" and all other races are coded as 0="non-white". The categories of means of offense in the data set are shooting, beating, stabbing, and other. This was recoded into 1="firearm" (the shooting category) and 0="non-firearm" (comprised of the categories of beating, stabbing, and other). The apparent motive variable in the data set is coded into the following categories: revenge, jealousy, anger/hatred, argument/fight, robbery or theft etc., sexual assault/rape, self-defense, escape, with other criminal act, inadvertent act, other motive, and mentally ill-insane. This variable was recoded so that the categories of robbery/theft, sexual assault/rape, and 'with other criminal act' were collapsed into 1="another criminal act", and all other categories were collapsed into 0="no other criminal act".

The SHR codes victim gender as 1="male", 2="female", and

9="unknown". This variable was recoded such that the unknown cases are to be treated as missing and the female category is coded as 0. Victim race is coded in the SHR into the following 6 categories: white, black, American Indian, Asian and Islander, other, and unknown. This variable was recoded such that 1="white" and 0="non-white" (made up of the categories of black, American Indian, Asian and Islander, and other). The unknown category was recoded as missing values.

The SHR breaks weapon down into 17 individual categories. These were recoded into the following two groups: 1="firearm" (consisting of the categories of firearm, handgun, rifle, shotgun, and other gun) and 0="non-firearm" (which encompasses knife, blunt object, personal weapon, poison, pushed out window, explosives, fire, drugs, drowning, strangulation, and asphyxiation). The unknown values were recoded as missing. The circumstances surrounding the homicide, taken here to indicate the situation leading up to the killing, cover 32 categories in the SHR. These were recoded as follows: 1="felony"[5] (which

---

[5] The circumstances surrounding the offense are labelled differently for Canada and the United States as a result of the fact that the term "felony" is not recognized in Canadian law, necessitating the use of the label "another criminal act". In Canada, those offenses which are considered serious are called indictable offenses. The punishment for these offenses is generally more stringent than the maximum of six months in prison and/or a five hundred dollar fine assigned to most summary-conviction offenses. The punishment for a felony, on the other hand, is a minimum one year term of imprisonment.

includes the categories of rape, robbery, burglary, larceny, auto theft, arson, prostitution, other sex offense, narcotics laws, gambling, other felony, and suspected felony) and 0="non-felony" (covering the categories of abortion, lovers triangle, killed by babysitter, brawl under alcohol, brawl under drugs, argument over money, other arguments, gangland killing, youth gang killing, institution killing, sniper attack, felon by citizen, felon by police, and other). The unknown category was recoded as missing values. The recoding of the homicide circumstances in the SHR was based on a determination of whether the homicide occurred at a time when another act which could be deemed illegal was being perpetrated.

Analyses

Initially, frequencies were run on all of the variables to determine the number of cases in the various categories of the variables to be analysed. Cross tabulating the dependent variable with each independent variable provided some early indications as to whether any support was received for the hypotheses. Cramer's V was computed to measure the strengths of the associations between the independent variables and the dependent variable[6].

---

[6] Although the PRE measure of Lambda provides a more direct interpretation with respect to the association between an independent and dependent variable, the discovery of largely unequal row marginals in the cross tabulations discouraged the use of this statistic, since Lambda may take on a value of 0 even when some association between the variables does exist in cases where the row marginals are very unequal.

This study is concerned with establishing which of the independent variables of gender, race, age, weapon, and circumstances surrounding the offense aid in the prediction of a homicide case being cleared. Specific predictions were made as to which categories of the independent variables would be disproportionately represented in uncleared homicides. Initially examining the group means and standard deviations of homicides cleared and uncleared on the five predictor variables provided some preliminary indication as to which variables best differentiated between the categories of cleared and uncleared homicides. Following a method outlined by Bailey and Unnithan (1994), the categorical predictor variables were converted into dummy (present/absent) variables for analysis. The predictor variables are male victim, white victim, victims aged 65 years and older, firearms used, and homicide involving the commission of another offense (felony homicide). Therefore, the independent variables were converted into the following dummy variables: white and non-white; 65 years and over and under 65 years; firearm and non-firearm; and concomitant criminal act and no other criminal act/concomitant felony and non-felony. Gender is already a dichotomous variable and remained coded as such. For all of the variables, the categories indicating the presence of the predicted characteristic were coded as "1" and the absence of the characteristic was coded as "0". For dichotomous predictor

variables, the mean is the proportion of cases with a value of 1. This analysis aided in making an initial determination of which predictor variables distinguished between the two categories of homicide.

In the final stage of the analysis, the multivariate statistical technique employed is logistic regression analysis. Although multiple regression appears to be a plausible option in this case, according to Norusis (1993:1), when using a dependent variable that can have only two values (an event occurring or not occurring), "the assumptions necessary for hypothesis testing in regression analysis are necessarily violated." For instance, it is not reasonable to make the assumption that the errors are normally distributed. Moreover, employing multiple regression analysis does not permit interpretation of the predicted values as probabilities, since they are not restricted to values which fall between 0 and 1.

Using a logistic regression model permits making far fewer assumptions than if the statistical analysis were limited to discriminant analysis. Logistic regression also makes it possible to directly estimate the probability of the occurrence of a homicide remaining uncleared. In accordance with the interpretation of logistic coefficients, it is possible to determine the odds of a homicide being uncleared. Furthermore, using classification tables makes it possible to assess the goodness of fit of the model by

comparing predictions made using the model to the observed outcomes. For the categorical independent variables, deviation coding allows for discussion of each category in comparison to the average effect of all categories.

RESULTS

Chapter 5

The results of the statistical analyses will be presented in a comparison format, beginning with Canada versus the United States, followed by the four Maritime provinces versus four New England States, and Ontario versus New York State.

Homicide Clearance in Canada and the United States

The most notable difference between homicides committed in Canada and the United States is the sheer amount of murder which occurs in the U.S. In terms of the data used in this study, the average number of victims of homicides committed in Canada each year is 419. For the United States, however, the average number of homicide victims per year is 20,080. The uncleared homicide rate is also higher in the U.S. In Canada, the average number of uncleared homicides between 1961 and 1983 is 14.5 percent. Of all homicides reported in the U.S. between 1976 and 1992, an average of 27.3 percent are uncleared. While the frequencies run of all of the variables display relatively predictable results (Tables 1 and 2), cross tabulating the independent variables with the dependent variable of clearance status reveals some interesting findings.

Gender of the Victim

Consistent with previous literature, males make up the majority of homicide victims in both countries (Tables 1

TABLE 1
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN CANADA BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	6149(63.8%)	5176 (84.2%)	973 (15.8%)
FEMALE	3489(36.2%)	3064 (87.8%)	425 (12.2%)
WHITE	7305(80.2%)	6092 (83.4%)	1213 (16.6%)
NON-WHITE	1801(19.8%)	1709 (94.9%)	92 (5.1%)
UNDER 10	642(6.7%)	488 (96.1%)	20 (3.9%)
10-19 YEARS	961(10.0%)	828 (86.2%)	133 (13.8%)
20-29 YEARS	2484(25.8%)	2061 (83.0%)	423 (17%)
30-49 YEARS	3422(35.6%)	1611 (83.6%)	317 (16.4%)
50-64 YEARS	1370(14.3%)	902 (86.7%)	138 (13.3%)
65 AND OVER	732(7.6%)	623 (85.1%)	109 (14.9%)
15-25 YEARS	2342(24.3%)	1991 (85.0%)	351 (15.0%)
UNDER15/OVER25	7300(75.7%)	6250 (85.6%)	1050 (14.4%)

TABLE 2
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN THE U.S. BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	261,852(76.8%)	189,222 (72.3%)	72,630 (27.7%)
FEMALE	79,172(23.2%)	58,937 (74.4%)	20,235 (25.6%)
WHITE	178,015(52.5%)	129,752 (72.9%)	48,263 (27.1%)
NON-WHITE	160,740(47.5%)	117,238 (72.9%)	43,502 (27.1%)
UNDER 10	12,725(3.8%)	11,174 (87.8%)	1,551 (12.2%)
10-19 YEARS	37,007(11.0%)	27,461 (74.2%)	9,546 (25.8%)
20-29 YEARS	114,378(34.1%)	82,140 (71.8%)	32,238 (28.2%)
30-49 YEARS	118,807(35.4%)	88,117 (75.2%)	30,690 (25.8%)
50-64 YEARS	33,745(10.1%)	24,225 (71.8%)	9,520 (28.2%)
65 AND OVER	19,030(5.7%)	12,733 (66.9%)	6,297 (33.1%)
15-25 YEARS	103,180(30.7%)	74,215 (71.9%)	28,965 (28.1%)
UND15/OVER25	232,511(69.3%)	171,634 (73.8%)	60,877 (26.2%)

and 2). Examining sex by clearance status in Canada reveals that in 12.2 percent of cases in which the victim is female the case is uncleared, compared to 15.8 percent of uncleared

cases where the victim is male (Table 1). Although the association between these variables is found to be statistically significant[7], the strength of the relationship is very small (V=.05). Examining the group means of cleared and uncleared homicides for the predictor variable of gender, displayed in Table 3, reveals that 62.8 percent of cleared homicides involve a male victim, whereas in 69.6 percent of uncleared homicides the victim is male, supporting the hypothesis that victims of uncleared homicides are more likely to be male.

TABLE 3
GROUP MEANS AND STANDARD DEVIATIONS OF PREDICTOR VARIABLES OF HOMICIDE CLEARANCE IN CANADA*

	CLEARED	HOMICIDES	UNCLEARED	HOMICIDES
VARIABLE	MEAN	SD	MEAN	SD
MALE VICTIM	.628	.483	.696	.460
WHITE VICTIM	.781	.414	.930	.256
VICTIM AGE 65 AND OVER	.076	.265	.079	.269
VICTIM AGE 15 TO 25	.242	.428	.251	.433
FIREARM USED	.381	.486	.442	.497
CONCOMITANT CRIMINAL ACT	.131	.338	.396	.489

*For dichotomous variables, mean is the proportion of cases with a value of 1.

Of all homicide victims in the U.S. between 1976 and

---

[7]Unless otherwise indicated, $p<.01$.

1992, 76.8 percent are male and 23.2 percent are female (Table 2). In comparison to Canada, there are proportionally more male victims in the U.S. (76.8 percent compared to 63.8 percent). This finding may in part be a reflection of the greater proportion of stranger homicides occurring in the United States than in Canada (Silverman and Kennedy, 1995), as murder victims of strangers tend to be male (Riedel, Zahn, and Mock, 1985; Silverman and Kennedy, 1987; Wilbanks, 1984). As Table 2 shows, cross tabulating gender with clearance status reveals that the percentage of male and female victims in the U.S. whose cases are uncleared is very similar (27.7 percent and 25.6 percent respectively). Although the association between the variables is statistically significant, the strength of the association is negligible (V=.02). The inability of gender to predict homicide clearance is further substantiated by an examination of the group means of this predictor variable. As Table 4 shows, of all homicides which are cleared, 76.3 percent of the victims are male while 78.2 percent of uncleared homicides involve male victims. This finding corresponds to suggestions of a recent change in the patterns of female victimization (often referred to as "the Emancipation Hypothesis"), a possible explanation which will be pursued at a later point.

Age of the Victim

As expected on the basis of other studies, the largest

TABLE 4
GROUP MEANS AND STANDARD DEVIATIONS OF PREDICTOR VARIABLES OF HOMICIDE CLEARANCE IN THE U.S.*

	CLEARED	HOMICIDES	UNCLEARED	HOMICIDES
VARIABLE	MEAN	SD	MEAN	SD
MALE VICTIM	.763	.426	.782	.413
WHITE VICTIM	.525	.499	.526	.499
VICTIM AGE 65 AND OVER	.052	.222	.070	.255
VICTIM AGE 15 TO 25	.302	.459	.322	.467
FIREARM USED	.657	.475	.648	.478
CONCOMITANT FELONY	.187	.390	.631	.483

*For dichotomous variables, mean is the proportion of cases with a value of 1.

age category of homicide victims in Canada is that of 30 to 49 years (35.6 percent), followed by 20 to 29 years(25.8 percent) (Table 1). Persons aged 65 and over make up only 7.6 percent of all homicide victims, a total of 732 cases. The age distribution of homicide victims in the U.S. also met expectations generated from previous homicide research. The largest number of homicide victims are between the ages of 30 and 49 (35.4 percent) and 20 and 29 (34.1 percent)(Table 2). Of all homicide victims, only 3.8 percent are under the age of ten. 5.7 percent of the victims are over the age of 64, compared with 7.6 percent in Canada.

Cross tabulating age with clearance status produces some unanticipated findings, which are displayed in Tables 1 and 2. For Canada, when the age variable is broken down into the six proposed categories, it is discovered that while 14.9 percent of cases involving victims over age 65 are uncleared, two other age categories - 20 to 29 years and 30 to 49 years - have higher percentages of cases that are uncleared (17 percent and 15.2 percent respectively). There is some support in the literature for this finding - at least in the United States.

There is a significance to the recent rise in the murder rate of individuals under age 24 (Blumstein and Heinz, 1995). It has been suggested that approximately 18,600 murders committed by individuals aged 15 to 22 between 1986 and 1992 would not have occurred had the youth murder rate remained at its previous, flat average (Blumstein, 1995). It is argued that the substantial increases that occurred between 1985 and 1992 in rates of homicide by youths 18 and under, the number of juvenile homicides committed with guns, and non-white juvenile arrest rates on drug charges, point to an explanation concerning illegal drug markets. Baumer (1994) also proposes the existence of a relationship between illicit drug use and homicide, suggesting that crack use may affect homicide rates through substantial or rising levels of gun-related robberies and robbery homicides. In support of this

hypothesis, he cites evidence of a national increase of 17 percent in gun-related robberies between 1987 and 1991. Demands for crack are suggested to be related to demands for guns, with homicides being a consequence of the intrinsically unstable nature of crack markets. Increases in the types of homicide that result from illegal drug trade activity are likely to be reflected in rising rates of uncleared homicides.

An analysis of gang and nongang homicides in California by Bailey and Unnithan (1994) reviews evidence of an increase in both gang homicides and in the number of existing gangs beginning in the 1960s. Their study seeks to examine the extent to which gang homicide constitutes a distinctive phenomenon in comparison to nongang homicide. A significant finding of the authors with respect to homicide clearance is that the age of the victim and lack of prior contact between the victim and offender are among the important variables which distinguish between gang and nongang homicide. Victims of gang homicides are between the ages of 20 and 21, in contrast to victims of nongang homicides who are between 30 and 32 years of age. Furthermore, public location and the use of a firearm as the weapon also emerge as important predictor variables. Taken together, these findings imply that in the U.S. homicide cases involving victims in and around the age of 20 may be less likely to be cleared to the extent that victims in this

age group are disproportionately represented among gang homicides, where factors such as a lack of previous contact between the victim and offender and the public location of the offense may impede the identification of a suspect. While Canada does not match the U.S. in terms of its reputation for youth gang violence, particular regions of Canada such as Quebec and British Columbia are notorious for their existing drug trades, and Quebec is also known for its organized crime activity and resultant "gangland" killings (Silverman and Kennedy, 1995). Consequently, there may be a similar influence of this victim age group on homicide clearance operating in Canada.

To examine this issue further, the age variable was recoded such that it became possible to compare 15 to 25 year old victims with the remaining homicide victims. This revealed that nearly one-quarter (24.3 percent) of all Canadian homicide victims are between 15 and 25 years of age (Table 1). However, a cross tabulation run between this age group and homicide clearance did not display a substantial difference between the two groups; in homicide cases involving victims aged 15 to 25, 15 percent are uncleared, whereas 14.4 percent of homicide cases are uncleared where the victim does not fall into this age category (Table 1). Moreover, the variables are not associated at a statistically significant level (V=.007). Furthermore, examining the group means of this predictor variable,

displayed in Table 3, reveals that 24.2 percent of all cleared homicides involve a victim aged 15 to 25 compared to 25.1 percent of uncleared homicides.

The U.S. data were also analysed with respect to the possibility that youth gang violence and illicit drug markets are related to homicide clearance. This analysis reveals that 30.7 percent of all U.S. homicide victims are between the ages of 15 and 25 (compared to 24.3 percent in Canada). However, similar to homicide clearance in Canada, cross tabulating this age category with homicide clearance displays essentially no difference: in homicide cases involving victims aged 15 to 25, 28.1 percent are uncleared, whereas when the victim is not between these ages, 26.2 percent are uncleared (Table 2). Although these variables are associated at a statistically significant level, the strength of the relationship is negligible (V=.02). The low predictive value of this age group for homicide clearance is confirmed by examining the group means of this predictor variable, which reveals that 30.2 percent of cleared homicides and 32.2 percent of uncleared homicides in the U.S. involve a victim aged 15 to 25 (Table 4). The finding that the age category of 15 to 25 years does not effectively distinguish between cleared and uncleared homicides for both Canada and the United States as a whole may be an indication that this predictor variable is only statistically significant with respect to particular areas notorious for

drug- and gang-related activity, leaving its impact invisible at a national level.

Reverting back to the original six-category age variable, the cross tabulation indicates that the variables are associated at a statistically significant level in Canada, however the strength of the relationship is very small (V=.09). The group means of cleared and uncleared homicides for victims over age 65 shown in Table 3 signify that 7.6 percent of cleared homicides involve a victim aged 65 and over while 7.9 percent of uncleared homicides involve a victim in this age category. This indicates slight support for the predicted hypothesis.

Cross tabulating age with clearance status for the U.S. indicates that while 26.4 percent of cases are not cleared where the victim is under the age of 65, 33.1 percent of cases where the victim is over age 65 are uncleared. The association between the variables of age and clearance is statistically significant, but the strength is very small (V=.08). Unlike what was found in terms of homicide clearance in Canada, victims 65 and over had the highest proportion of uncleared homicides of all of the age categories in the U.S. Furthermore, the age category of 50 to 64 is one of two which has the next highest proportion of uncleared homicides, which is also distinct from the pattern found for Canada, where the highest uncleared rates occurred for victims aged 20 to 29 years and 30 to 49 years. Table 4

shows that while 5.2 percent of cleared homicides in the U.S. involve victims over age 65, this age group constitutes 7 percent of the victims of uncleared homicides. The present results are consistent with previous findings: Silverman and Kennedy (1995) found no notable effect of the age of the victim on homicide clearance in Canada, while Cardarelli and Cavanagh (1992) and Riedel and Rinehart (1994) both observed a markedly lower clearance rate for victims over the age of 64 in the U.S.

Race of the Victim

Concerning the race of homicide victims in Canada, the majority (80.2 percent) are white (Table 1). What is interesting, however, is the finding in Table 1 that in 16.6 percent of cases in which the victim is white the case is uncleared, compared to 5.1 percent of cases uncleared where the victim is not white. This finding is statistically significant, and is the second strongest association among the independent variables (V=.13). The interpretation of the group means of the race variable provides that while 78.1 percent of cleared homicides involve a white victim, a total of 93 percent of uncleared homicides involve a victim who is white (Table 3). This finding supports the prediction that the more likely the victim of the homicide is white, the more likely the case will not be cleared.

Examining U.S. homicide victims in terms of their race produces findings consistent with results from previous

research concerning the high involvement of African-Americans in homicides in the United States. Although whites compose the majority of homicide victims (52.1 percent), African-American victims constitute a substantial proportion (45.1 percent). This is very distinct from the race of homicide victims in Canada, who are overwhelmingly white (80.2 percent). American Indians are found to constitute less than one percent of U.S. homicide victims. Interestingly, examining race by clearance status for the U.S. reveals little difference between the races. As can be seen in Table 2, an identical proportion of cases are uncleared (27.1 percent) whether the victim is white or is non-white (the large majority of whom are African-American). Furthermore, the association between these variables is not found to be statistically significant(V=.007). Moreover, the results in Table 4 reveal that 52.5 percent of cleared homicides, compared to 52.6 percent of uncleared homicides, involve a white victim. Thus, the most significant finding with respect to race concerns the indication that the likelihood that a U.S. homicide case will be cleared is virtually equivalent for white and non-white victims. This finding suggests that although the homicide patterns of different races may be diverse, they function to impact on the odds of homicide clearance in similar ways. This issue will be discussed further in the concluding chapter.

TABLE 5
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN CANADA BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	3719(39.0%)	3128 (84.1%)	591 (15.9%)
NON-FIREARM	5823(61.0%)	5078 (87.2%)	745 (12.8%)
CRIMINAL ACT	1332(15.9%)	1096 (75.3%)	360 (24.7%)
NO CRIM. ACT	7051(84.1%)	6418 (92.7%)	509 (7.3%)

Weapon

Table 5 shows that a total of 39 percent of homicides in Canada were committed using a firearm. In contrast, firearms are overwhelmingly employed as homicide weapons in the U.S. 65.4 percent of all homicides in that country are committed with a firearm (Table 6). These results support the findings of Sproule and Kennett (1989), who purport a greater use of firearms as homicide weapons in the U.S. than Canada.

TABLE 6
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN THE U.S. BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	215,764(65.4%)	159,551 (73.9%)	56,214(26.1%)
NON-FIREARM	114,019(34.6%)	83,459 (73.2%)	30,560(26.8%)
FELONY	72,147(26.3%)	42,277 (58.6%)	29,870(41.4%)
NON-FELONY	201,856(73.7%)	184,379 (91.3%)	17,477 (8.7%)

In Canada, in 15.9 percent of cases involving a firearm, the case is uncleared, while 12.8 percent of cases that do not involve a firearm are uncleared (Table 5). This

result is statistically significant, although the relationship is minute(V=.04). Table 3 reveals that, of homicides which are cleared, 38.1 percent involve a firearm. This is in comparison to 44.2 percent of uncleared homicides employing a firearm as the weapon. These results support the hypothesis that victims of uncleared homicides are more likely to be killed with a firearm.

Although the results in Table 6 do not reveal a substantial difference in the U.S. between offenses committed with a firearm and those which employ another weapon (26.1 percent and 26.8 percent uncleared respectively), the association is found to be statistically significant (Table 6). The strength of the relationship, however, is minute (V=.008). An important finding concerns the indication that in those homicides where a firearm is the weapon used, the case is more likely to be cleared, which is both opposite to the hypothesized relationship and to the results generated using the Canadian data. In the U.S., 65.7 percent of cleared homicides, as compared to 64.8 percent of uncleared homicides, employ a firearm as the weapon (Table 4). The high involvement of firearms in homicides committed in the United States suggests that their use is not confined to felony-related murders such as robberies, which are inherently more difficult to solve, thus rendering it an insignificant predictor of homicide clearance. High levels of firearm ownership in the U.S. may

result in greater accessibility of these weapons during domestic disputes and other family-related killings, which by their nature are more easily cleared.

Circumstances Surrounding the Offense

Tables 5 and 6 indicate a greater proportion of homicides committed in the U.S. than Canada involve the commission of another criminal act at the time of the killing (26.3 percent and 17.4 percent respectively). This finding may be a reflection of the violent gun culture existent in the United States (Silverman and Kennedy, 1993), where the frequent use of firearms in offenses such as robberies often result in fatalities. Importantly, 24.7 percent of cases involving a concomitant criminal act are uncleared in Canada, as opposed to only 7.3 percent of cases remaining uncleared when the victim was not killed during the commission of another offense (Table 5). These variables are found to be associated at a statistically significant level, and the strength of the association approaches moderate (V=.22). The group means displayed in Table 3 signify that 13.1 percent of cleared homicides are committed during the commission of another criminal act. In contrast, 39.6 percent of uncleared homicides involve a concomitant criminal act. Thus, as expected, the more likely the homicide involves the commission of another offense, the more likely the case will be uncleared.

Similar to the pattern found in Canada, significantly

more homicides in the U.S. are uncleared when the murder involves another criminal act. In the U.S., the homicide is not cleared in 8.7 percent of cases which do not involve a concomitant felony, as opposed to 41.4 percent of cases involving a concomitant felony remaining uncleared (Table 6). The association between these variables is statistically significant, and the strength, the strongest of the five independent variables, is moderate (V=.38). The importance of the circumstances surrounding the homicide in terms of the likelihood the case will be cleared is also evident from the finding that 18.7 percent of cleared homicides, in contrast to 63.1 percent of uncleared homicides, involve the commission of another felony (Table 4). These results support the hypothesized prediction that those cases involving a concomitant felony are more likely to remain uncleared.

Logistic Regression Results: Canada and the United States

A forward conditional regression analysis was run separately using the Canadian and U.S. homicide data. The logistic regression model can be expressed as:

$$\log \frac{P}{1-P} = \alpha + \sum \beta_i * X_i$$

where P is the probability of the event occurring (in this instance the clearance of a homicide case), α is the intercept and β_i indicates slope coefficients for the predictor variables X (which in this case are gender, age,

race, weapon, and circumstances surrounding the offense). Deviation coding is used for all of the independent variables, allowing for a comparison of the effect of each category to the average effect of all categories.

Canada

TABLE 7
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN CANADA

VARIABLE	B	S.E.	R	EXP (B)
UNDER AGE 10	1.2214**	.3018	.0522	3.3920
AGE 10 TO 19	-.0522	.1353	.0000	.9491
AGE 20 TO 29	-.7248**	.0939	-.1045	.4844
AGE 30 TO 49	-.5159**	.0890	-.0774	.5970
AGE 50 TO 64	.0821	.1158	.0000	1.0856
OVER AGE 65	-.0106***	N/A	N/A	N/A
NO CONCOMITANT CRIMINAL ACT	.8049**	.0444	.2486	2.2364
NON-WHITE VICTIM	.6597**	.0779	.1149	1.9342
FEMALE VICTIM	.2816**	.0454	.0831	1.3252
NO FIREARM USED	.2648**	.0405	.0878	1.3032
CONSTANT	2.6981**	.1031		

**p<.01
***The value of the coefficient for the last category is not displayed in the output, and thus has to be calculated by hand.

7917 Canadian cases were included in the analysis[8]. The results provide general support for the predictor model. Overall, 89.14 percent of the homicide cases are correctly

[8]1725 cases were rejected because of missing data.

classified, as a result of the correct classification of virtually all of the cleared homicides (99.3 percent). A total of 1.34 percent of the uncleared homicides are correctly classified. The observation that the model is a good fit is also evident from the reduction in the -2 Log Likelihood from the model containing the constant only (-2LL = 5274.93) through the inclusion at each step of an additional variable to the model (final -2LL = 4644.82). Furthermore, both the values for the Model Chi-square and the Improvement are statistically significant[9]. Thus, in terms of the model chi-square, it is justifiable to reject the null hypothesis that the coefficients for all of the predictor variables in the final model, with the exception of the constant, are 0. As the value for improvement is statistically significant at each successive stage of building the model, one can justify rejecting the null hypothesis that the coefficients for the variables added at each step are 0.

Looking specifically at the predictor variables in the final model, the findings shown in Table 7 indicate that all of the variables have a statistically significant effect, with the exception of two of the age categories. The effects on the likelihood of homicide clearance of the

---

[9] The model chi-square indicates the difference between -2LL for the model containing only the constant and -2LL for the current model. The value for improvement denotes the change in -2LL moving from the previous to the current stage in building the model.

victim's age falling between 10 and 19 or 50 and 64 are not statistically significant in comparison to the average effect of all the age categories. With respect to the other age categories, the only age group which increases the odds of the homicide being cleared is victims under age 10, where the odds are increased by a factor of 3.5. The negative values for B for the remaining age categories of 20 to 29, 30 to 49, and 65 and over indicate that where cases involve victims whose ages fall within one of these categories, the odds of clearing the homicide are decreased.

The use of deviation coding lead to a recoding of the remaining independent variables such that homicides not involving another criminal act, not involving a firearm, not involving a white victim, and not involving a male victim are all coded as 1[10]. The values for the Exp (B) of these predictor variables all provide support for the hypotheses derived from the homicide clearance model. More specifically, when the homicide case does not involve another criminal act, the odds of the homicide being cleared are increased by a factor of 2.2. When the victim in the homicide case is not white, the odds of clearing the case are increased by a factor of 1.9. Finally, when the victim is a female, or the weapon used in the homicide is not a firearm, the odds of the homicide being cleared are

---

[10]This means of recoding is used throughout the remaining logistic regression analyses.

increased by a factor of 1.3. Examining the R statistics, which signify the partial correlation between the dependent variable and each independent variable, reconfirms the previous finding that the circumstances surrounding the offense have the strongest impact on the likelihood of homicide clearance. The race variable has the second strongest effect. The smallest R values emerge for the variables of gender and weapon, suggesting that the partial contribution of these variables to the model is minimal.

The United States

TABLE 8
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN THE U.S.

VARIABLE	B	S.E.	R	EXP (B)
UNDER AGE 10	.6165**	.0338	.0373	1.8524
AGE 10 TO 19	-.2607**	.0164	-.0325	.7705
AGE 20 TO 29	-.2091**	.0119	-.0360	.8113
AGE 30 TO 49	-.0414**	.0119	-.0065	.9594
AGE 50 TO 64	-.0397*	.0165	-.0040	.9611
OVER AGE 65	-.0656***	N/A	N/A	N/A
NO CONCOMITANT FELONY	1.0131**	.0058	.3598	2.7542
NON-WHITE VICTIM	.0162**	.0058	.0050	1.0163
FEMALE VICTIM	.1356**	.0072	.0387	1.1452
CONSTANT	1.5749**	.0095		

*p<.05
**p<.01
***The value of the coefficient for the last category is not displayed in the output, and thus has to be calculated by hand.

The logistic regression analysis using all of the homicide cases contained in the SHR for the years under examination included 305,482 cases[11]. As with the logistic regression results for the Canadian homicide data, the findings in this case provide general support for the predictor model. Overall, there is a correct classification in terms of clearance of 83.3 percent of the U.S. homicide cases. However, although all of the cleared homicide cases achieved correct classification, none of the 44,008 cases which are uncleared are classified correctly. The improvement is statistically significant at each successive step in building the model, and there is a decrease in the -2LL value at each progressive stage. Thus, it is possible to reject the null hypothesis that the coefficients for the predictor variables added at each step, with the exception of the constant, are 0.

As is evident from Table 8, the only variable which is not included in the final model is the homicide weapon. Unlike homicide clearance in Canada, whether the homicide weapon is a firearm or not does not have a statistically significant effect on the odds of clearing a homicide case in the U.S. The remaining predictor variables are statistically significant at a .01 level, with the exception of the age category of 50 to 64, which is statistically

---

[11]85,276 cases were rejected due to missing data.

significant at a .05 level. Examining the R values in Table 8 indicates that, in general, the various age categories have a small partial contribution to the model. Similar to homicide clearance in Canada, the odds of clearing the case are increased only for victims in one age category, those under 10 years. However, for the U.S., the odds of clearance in these cases are increased by a factor of 1.85, whereas the odds are increased in Canada by a factor of 3.5. For all other age variables, the negative values for B denote a decrease in the odds of the homicide being cleared where the victim belongs to one of these age categories, when compared to the average effect of all age categories.

The circumstances surrounding the offense have the largest partial contribution to the model (R=0.3598), and the Exp (B) for this variable signifies that where the homicide case does not involve a concomitant felony, the odds of clearing the case are increased by a factor of 2.75. Thus, the prediction derived from the homicide clearance model is supported. The circumstances surrounding the offense appear to have a similar influence on homicide clearance for both Canada and the U.S. The partial contribution to the model of the gender variable is small (R=.0387). However, the value for the Exp (B), which suggests that where a homicide involves a female victim the odds of clearing the case are increased (by a factor of 1.15), does support the hypothesis that males are more

likely to be victims of uncleared homicides.

An interesting finding emerged with respect to the race variable. Although the partial contribution of this variable to the model is negligible (R=0.005), the value of 1.02 attained for Exp (B) signifies that where the homicide involves a victim who is not white, the odds of clearing the case are increased (although only very slightly). The direction of the influence of the victim's race on the odds of homicide clearance is further substantiated by the positive value attained for B (0.016). Thus, while the cross tabulation of clearance status by race reveals identical proportions of white and non-white victims as uncleared homicides, the logistic regression results suggest that the impact on homicide clearance where a victim is white produces a slight decrease in the odds of clearing the case, as was predicted by the model. The influence of the victim's race on the odds of homicide clearance is clearly greater in Canada, where the odds of clearing a case when the victim is not white are increased by a factor of 1.9. This finding reflects the different homicide patterns of the non-white victims in the two countries.

Homicide Clearance in the Maritimes and New England States

As was discussed in the methodology chapter, the second stage of the analysis sought to investigate demographically similar areas in order to determine whether the contrasts which distinguish Canada and the United States on a national

level continue to emerge in a comparison of similar regions. As such, out of the Canadian national homicide data were extracted those cases which were reported in the provinces of Nova Scotia, New Brunswick, Newfoundland, and Prince Edward Island. The resulting data set contains 550 cases, which amounts to 5.7 percent of all homicides reported in Canada between 1961 and 1983. Comparing the clearance status of homicides which occurred in the Maritimes with those of the remaining provinces and territories indicates that the clearance rate is markedly higher in the Maritime provinces. Of all homicides which took place in the Maritimes, 3.6 percent are uncleared[12], whereas for the rest of Canada, 15.2 percent are uncleared.

From the SHR data were extracted the homicide cases reported for the states of Maine, New Hampshire, Vermont, and Rhode Island. This produces a data set of 1665 cases, which constitutes only 0.5 percent of all homicides which were reported to the SHR between 1976 and 1992. Thus, the comparison at this stage consists of two regions with relatively low levels of murder in comparison to the regions of both countries excluded from the analysis. The uncleared homicide rate is slightly lower for these four states than for the U.S. as a whole: the percentage of uncleared

---

12

As a result of the low percentage of uncleared homicides in the Maritimes, the results of the cross tabulations require cautious interpretation due to the small number of cases in the uncleared cells.

homicides in this region is 21.6 percent, whereas the average for the U.S. as a whole is 27.3 percent. While the uncleared rate is not nearly as low as that of the Maritimes, the substantially greater proportion of uncleared homicides in the U.S. than Canada in general essentially precludes the possibility of achieving equivalent clearance rates for comparison, even in the case of demographically similar regions.

Gender of the Victim

Tables 9 and 10 reveal almost identical proportions of male victims in the Maritimes and the four New England States (64.7 percent and 64.2 percent respectively).

TABLE 9
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN THE MARITIMES BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	356(64.7%)	344 (96.6%)	12 (3.4%)
FEMALE	194(35.3%)	186 (95.9%	8 (4.1%)
WHITE	406(77.5%)	390 (96.1%)	16 (3.9%)
NON-WHITE	118(22.5%)	115 (97.5%)	3 (2.5%)
UNDER 10 YRS	48(8.7%)	46 (95.8%)	2 (4.2%)
10-19 YEARS	55(10.0%)	52 (94.5%)	3 (5.5%)
20-29 YEARS	129(23.5%)	128 (99.2%)	1 (0.8%)
30-49 YEARS	195(35.5%)	192 (98.5%)	3 (1.5%)
50-64 YEARS	61(11.1%)	56 (91.8%)	5 (8.2%)
65 AND OVER	62(11.3%)	56 (90.3%)	6 (9.7%)
15-25 YEARS	134(24.4%)	131 (97.8%)	3 (2.2%)
UNDER15/OVER25	416(75.6%)	399 (95.9%)	17 (4.1%)

TABLE 10
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN FOUR NEW ENGLAND STATES BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	1068(64.2%)	845 (79.1%)	223 (20.9%)
FEMALE	596(35.8%)	460 (77.2%)	136 (22.8%)
WHITE	1486(90.0%)	1,179 (79.3%)	307 (20.7%)
NON-WHITE	166(10.0%)	118 (71.1%)	48 (28.9%)
UNDER 10 YRS	117(7.1%)	102 (87.2%)	15 (12.8%)
10-19 YEARS	186(11.3%)	150 (80.6%)	36 (19.4%)
20-29 YEARS	488(29.6%)	376 (77.0%)	112 (23.0%)
30-49 YEARS	546(33.2%)	431 (78.9%)	115 (21.1%)
50-64 YEARS	168(10.2%)	136 (81.0%)	32 (19.0%)
65 AND OVER	142(8.6%)	103 (72.5%)	39 (27.5%)
15-25 YEARS	465(28.2%)	369 (79.4%)	96 (20.6%)
UNDER15/OVER25	1182(71.8%)	929 (78.6%)	253 (21.4%)

However, the categorization of a homicide as cleared or uncleared is not found to be strongly distinguished by the gender of the victim in either region. In the Maritimes, 3.4 percent of homicides where the victim is male are uncleared, as compared to 4.1 percent of homicides remaining uncleared where the victim is female (Table 9). For the four New England States, however, there is a slightly greater proportion of uncleared cases in which the victim is female; 22.8 percent of homicides in which the victim is female are uncleared, whereas 20.9 percent of homicides are uncleared where the victim is male (Table 10). Nevertheless, the association between the gender of the victim and the clearance of the case is not statistically significant in either the Maritimes (V=.019) or the New

England States (V=.023). The low predictive value of gender in terms of homicide clearance in either region may be related to shifts in the nature of women's daily routine activities resulting from the liberation movement, and will be discussed further in the next chapter.

Age of the Victim

As can be seen from Tables 9 and 10, in both the Maritimes and the New England States, the majority of homicide victims are between the ages of 30 and 49 (35.5 percent and 33.2 percent respectively), followed by those aged 20 to 29 years (23.5 percent and 29.6 percent respectively). Of all homicide victims, in the Maritimes 11.3 percent are over the age of 64 and in the New England States 8.6 percent are 65 and over. In both regions victims aged 65 and over compose the largest proportion of uncleared cases in comparison to the five other age categories. In the Maritimes, 9.7 percent of homicides in which the victim is aged 65 and over are uncleared, as opposed to only 2.9 percent remaining uncleared where the victim is under the age of 65. The association between these variables is statistically significant and approaches a moderate level(V=.12). The impact of the victim falling within this age category is the same for the New England States, although the effect of the variable is not as strong as for the Maritimes. 27.5 percent of homicides in this region involving a victim aged 65 and over are uncleared, in

contrast to 20.6 percent uncleared where the victim is younger than 65. The variables are not found to be associated at a statistically significant level for these four New England States(V=.05).

A brief examination of the age category of victims between 15 and 25 did not reveal a statistically significant relationship to homicide clearance in either region. In both cases the associations between the variables are not found to be statistically significant (Maritimes V=.0083, New England States V=.008). Despite the nonsignificance of this variable, a noteworthy trend was found concerning the direction of the relationship. In both regions, a smaller proportion of cases are uncleared where the victim is between the ages of 15 and 25 than if the victim does not fall in this age category (Tables 9 and 10). These findings are opposite to what is found when homicides for both countries as a whole are examined. However, neither region being analysed at this stage is particularly well-known for high levels of gang activity, which may be causing the relationship noted here for the Maritimes and New England States to reverse when areas such as California and Quebec are included in the analysis.

Race of the Victim

In the Maritimes, 77.5 percent of all homicide victims are white (Table 9). For the New England States, 90 percent of victims are white (Table 10). As predicted, this is

substantially different from the proportion of white homicide victims which emerges with the inclusion of all of the U.S. states, where it is only 52.5 percent. Cross tabulating clearance by race, the results of which are displayed in Tables 9 and 10, indicates that this variable has opposite influences on homicide clearance in these two regions. In terms of the Maritimes, the results signify that homicide clearance is slightly more likely to occur where the homicide victim is not white, although the association is not statistically significant (V=.03). More specifically, 3.9 percent of homicides in which the victim is white are uncleared, as compared to 2.5 percent of homicides remaining uncleared where the victim is not white (Table 9). This finding is likely due to the small number of Native Canadians residing in the Maritime provinces; in a region where the population is overwhelmingly white, the absence of variation in terms of race makes predictions impossible. However, for the four New England States, the findings in Table 10 indicate that 28.9 percent of homicides where the victim is not white are uncleared, as opposed to 20.7 percent uncleared when the case involves a white victim. The association between the variables is statistically significant at a .05 level (V=.06). The most important finding with respect to race is that, even when the areas under comparison are demographically similar, the victim's race being white increases the likelihood of

homicide clearance in one region, the New England States, and decreases the likelihood of homicide clearance in the other, the Maritimes.

TABLE 11
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN THE MARITIMES BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	248(45.6%)	246 (99.2%)	2 (0.8%)
NON-FIREARM	296(54.4%)	279 (94.3%)	17 (5.7%)
CRIMINAL ACT	56(11.6%)	48 (85.7%)	8 (14.3%)
NO CRIM. ACT	427(88.4%)	423 (99.1%)	4 (0.9%)

Weapon

Tables 11 and 12 reveal a greater proportion of homicides in the four New England States than in the Maritimes employing a firearm as the weapon (53 percent and 45.6 percent respectively). There is a statistically significant association ($p<.05$) between weapon and homicide clearance for both regions. However, in both regions, there is a greater likelihood of the homicide being uncleared where the weapon is something other than a firearm, which is opposite to the hypothesized relationship between the variables. The direction of this relationship is also opposite to the results generated for Canada as a whole, but is the same as that found using all of the American data. These findings imply that the use of guns is spread across the various types of homicides in these two regions, which

TABLE 12
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN FOUR NEW ENGLAND STATES BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	837(53.0%)	706 (84.3%)	131 (15.7%)
NON-FIREARM	742(47.0%)	557 (75.1%)	185 (24.9%)
FELONY	272(20.6%)	185 (68.0%)	87 (32.0%)
NON-FELONY	1,048(79.4%)	982 (93.7%)	66 (6.3%)

is reducing the importance of the murder weapon as a predictor of homicide clearance.

In the Maritimes, 0.8 percent of homicides are uncleared where a firearm is used, in comparison to 5.9 percent of homicides not involving a firearm remaining uncleared (Table 11). The strength of the association is low to moderate (V=.14). With respect to the New England States, the results in Table 12 indicate that 15.7 percent of homicides employing a firearm are uncleared, in contrast to 24.9 percent uncleared where the weapon used is not a firearm. The strength of this association is similar to that found for the Maritimes (V=.12).

Circumstances Surrounding the Offense

Tables 11 and 12 reveal that nearly twice as many homicides in the four New England States than in the Maritimes are committed during the commission of another criminal act (20.6 percent and 11.6 percent respectively). In both cases, however, whether the homicide involves a concomitant criminal act emerges as the most important

factor distinguishing between cleared and uncleared homicides. The association between these variables for both regions is statistically significant and signifies that victims of uncleared homicides are more likely to be killed during the commission of another offense. In the Maritimes, 14.3 percent of homicides involving the commission of another criminal act are uncleared, compared to 0.9 percent where no other criminal act was taking place at the time of the killing (Table 11). The association between these variables approaches moderate (V=.27). For the four New England States, while 32 percent of homicides committed during another felony are uncleared, only 6.3 percent are uncleared where no other felony was taking place (Table 12). The association between these variables is moderate (V=.32) and is a slightly stronger association than was found with respect to homicides in the Maritimes.

Logistic Regression Results for the Maritimes and New England States

TABLE 13
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN THE MARITIMES

VARIABLE	B	S.E.	R	EXP (B)
NO CONCOMITANT CRIMINAL ACT	1.5768**	.3473	.4232	4.8394
CONSTANT	3.3260**	.3473		

**p<.01

The Four Maritime Provinces

The logistic regression analysis for the Maritimes includes 461 cases[13]. Again, a forward stepwise conditional method is used. The results indicate that the model is a good fit only with respect to the variable of the circumstances surrounding the offense. The final model includes only this variable and the constant in its equation. The classification table indicates that this final model correctly classifies a homicide case in 97.61 percent of cases. In particular, all of the 450 cleared homicides are correctly classified, while none of the 11 uncleared homicides are classified correctly. The improvement from the model with only the constant to the model which includes the circumstances variable is statistically significant. Circumstances have a substantial partial contribution to the model (R=0.4232). The value for Exp (B) signifies that where a homicide case involves no other criminal act at the time it was committed, the odds of the case being cleared are increased by a factor of 4.84 (Table 13). Adding the motive variable to the model with only the constant decreased the value of -2LL from 103.92 to 80.74.

Four New England States

There are 1380 cases included in the logistic

---

[13]89 cases were rejected as a result of missing data.

regression analysis of homicides reported in the four selected New England States[14]. The findings indicate that the model is a good fit only in terms of the circumstances and race variables. The classification table for this region provides that 99.10 percent of all cleared homicides and 8.76 of uncleared homicides are correctly classified in terms of clearance. Overall, 89.22 percent of homicides are classified correctly. At each stage in building the model, the improvement is statistically significant, and the value for the model chi-square decreases at each progression in the model-building, implying that one can reject the hypothesis that the coefficients for the predictor variables added to the model at each step, with the exception of the constant, are 0.

TABLE 14
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN FOUR NEW ENGLAND STATES

VARIABLE	B	S.E.	R	EXP (B)
NO CONCOMITANT CRIMINAL ACT	1.0252**	.0972	.3554	2.7877
NON-WHITE VICTIM	-.4866**	.1411	-.1070	.6147
CONSTANT	1.4290**	.1405		

**p<.01

The results, displayed in Table 14, reveal that the circumstances surrounding the homicide have a larger partial

[14]441 cases were rejected because of missing data.

contribution to the model than victim race (R=0.3554). The Exp (B) for this variable denotes that where a homicide case does not involve a concomitant felony, the odds of clearing the homicide case are increased by a factor of 2.79. Thus, the circumstances surrounding the case appear to have a greater impact on homicide clearance in the Maritimes, since the odds of clearing a case in that region are increased by a factor of almost five when no concomitant criminal act occurs at the time of the killing. This finding may be an indication that the two regions are distinguishable in terms of the types of crime-related homicides which are occurring.

Interestingly, the race variable is statistically significant in terms of the clearance model for the New England States, but not for the Maritimes. Although the partial contribution of the race variable is low to moderate (R=-0.1070), it is the direction of its influence that is noteworthy. The value for Exp (B) indicates that where the case involves a homicide victim who is not white, the odds of clearing the case are decreased by a factor of 0.615. Thus, the influence of race on homicide clearance in the four New England States is opposite both to what is predicted on the basis of the model, and to the impact of race on homicide clearance for the United States as a whole. These results may signify that African-Americans and whites are involved in different types of crime, such that a greater proportion of white victims changes the influence of

race on homicide clearance, as was found here.

Homicide Clearance in Ontario and New York State

The final stage in the analysis concerns a comparison of uncleared homicides in Ontario and New York State. The selection of these two areas is based on an assumption of demographic dissimilarity (ie. that New York contains a sizable African-American population, while Ontario is largely white in its racial composition). An examination of clearance patterns in these two regions seeks to determine whether similar trends will be generated as a consequence of their demographic disparity.

Nearly one-third of all reported homicides in Canada between 1961 and 1983 were committed in Ontario (28.8 percent). The number of homicides in New York State accounts for about one-tenth of all cases reported to the SHR from 1976 through 1992 (9.8 percent). The uncleared homicide rate in Ontario is lower than the national average (9.7 percent compared to 14.5 percent). New York, on the other hand, has a substantially greater rate of uncleared homicides than the U.S. as a whole (45.7 percent compared to 27.3 percent). Areas such as New York City are likely driving the uncleared rate in this state, where territorial conflicts between various ethnic groups are not uncommon.

Gender of the Victim

As can been seen in Table 15, in Ontario, 60.1 percent of homicide victims are male, which is roughly equivalent to

TABLE 15
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN ONTARIO BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	1664(60.1%)	1521 (91.4%)	143 (8.6%)
FEMALE	1107(39.9%)	982 (88.7%)	125 (11.3%)
WHITE	2288(86.3%)	2057 (89.9%)	231 (10.1%)
NON-WHITE	364(13.7%)	346 (95.1%)	18 (4.9%)
UNDER 10 YRS	220(8.0%)	212 (96.4%)	8 (3.6%)
10-19 YEARS	279(10.1%)	248 (88.9%)	31 (11.1%)
20-29 YEARS	648(23.4%)	589 (90.9%)	59 (9.1%)
30-49 YEARS	965(34.9%)	876 (90.8%)	89 (9.2%)
50-64 YEARS	421(15.2%)	374 (88.8%)	47 (11.2%)
65 AND OVER	233(8.4%)	202 (86.7%)	31 (13.3%)
15-25 YEARS	630(22.7%)	563 (89.4%)	67 (10.6%)
UNDER15/OVER25	2144(77.3%)	1941 (90.5%)	203 (9.5%)

the national average of 63.8 percent. With respect to homicide clearance, 11.3 percent of homicides where the victim is female are uncleared, compared to 8.6 percent of homicides involving a male victim being uncleared (Table 15). The strength of the association between the variables is weak ($V=.045$), but is statistically significant ($p<.05$). What is interesting in terms of this relationship is that there is a positive correlation between the variables, implying that homicides in which the victim is male are more likely to be cleared. This is opposite both to the predicted relationship and to the findings for Canada as a whole. However, Ontario is characterized by more large urban areas than regions like the Maritimes or the Prairies, which may pose a greater risk of stranger homicide

victimization to females in this province, thus increasing their likelihood of being a victim of an uncleared case.

TABLE 16
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN NEW YORK STATE BY VICTIM GENDER, RACE, AND AGE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
MALE	27,263(81.8%)	14,318 (52.5%)	12,945 (47.5%)
FEMALE	6,067(18.2%)	3,801 (62.7%)	2,266 (37.3%)
WHITE	16,147(49.5%)	8,800 (54.5%)	7,347(45.5%)
NON-WHITE	16,466(50.5%)	8,942 (54.3%)	7,524(45.7%)
UNDER 10 YRS	1,021(3.1%)	785 (76.9%)	236 (23.1%)
10-19 YEARS	3,729(11.4%)	2,298 (61.6%)	1,431 (38.4%)
20-29 YEARS	12,007(36.7%)	6,136 (51.1%	5,871 (48.9%)
30-49 YEARS	11,482(35.1%)	6,158 (53.6%)	5,324 (46.4%)
50-64 YEARS	2,944(9.0%)	1,707 (58.0%)	1,237 (42.0%)
65 AND OVER	1,522(4.7%)	821 (53.9%)	701 (46.1%)
15-25 YEARS	11,037(33.7%)	5,887 (53.3%)	5,150 (46.7%)
UND15/OVER25	21,668(66.3%)	12,018 (55.5%)	9,650 (44.5%)

Of all homicides reported in New York State, 81.8 percent of the victims are male (Table 16). This is consistent with the U.S. national average of 76.8 percent. However, unlike for the U.S. in general, the likelihood of homicide clearance in New York is distinguishable by the gender of the victim. The results displayed in Table 16 signify that while 37.3 percent of homicides involving a female victim remain uncleared, 47.5 percent of homicides where the victim is male are uncleared. The association between these variables is statistically significant (V=.078). Most important, it suggests that homicides

involving male victims are more likely to be uncleared, which is opposite to the relationship found for homicides in Ontario. This relationship is, however, consistent with the hypothesized prediction.

Age of the Victim

The age breakdown of homicide victims in Ontario, shown in Table 15, generates a picture very similar to that of the whole country. Once again, the age group with the greatest proportion of victims is that of 30 to 49 years (34.9 percent), followed by those 20 to 29 years (23.4 percent). Of all homicide victims, 8.4 percent are 65 years of age and over. However, unlike the pattern which emerged for all of Canada, in Ontario the age category with the largest percentage of uncleared homicides is those victims aged 65 and over, where 13.3 percent of cases are uncleared. Victims aged 50 to 64 have the second highest proportion of uncleared homicides (11.2 percent). The association between age and clearance ($V=.074$) is statistically significant($p<.05$), and the relationship denotes a greater likelihood of the homicide remaining uncleared as the age of the victim increases, supporting the predicted hypothesis.

Table 16 shows that, of all reported homicides for New York State, the greatest proportion of victims are between 20 and 29 years of age (36.7 percent) and 30 and 49 years of age (35.1 percent). These results are essentially equivalent to the findings for the country as a whole. 4.7

percent of the victims in New York are over the age of 64, which is close to half of the proportion of elderly victims found in Ontario. Unlike what is observed for the U.S. in general, Table 16 shows that the age group in New York with the greatest proportion of uncleared cases is those victims between 20 and 29 years of age (48.9 percent), followed by those 30 to 49 years of age (46.4 percent). Importantly, whether the victim is aged 65 and over or not is not associated with homicide clearance at a statistically significant level(V=.004). The results show an almost equal proportion of uncleared homicide cases for victims under and over the age of 65 (45.2 percent and 46.1 percent respectively). Since it is hypothesized that the elderly are more likely to be victims of uncleared homicides as a result of their high involvement in theft- and robbery-related homicides, the roughly equivalent proportion of this age group in the cleared and uncleared categories for this state may reflect a smaller proportion of these kinds of felony-related killings, and a consequent greater percentage of murders committed during offenses in which the elderly are not as frequently victims.

Examining homicides in terms of victims between the ages of 15 and 25 indicates that 22.7 percent of Ontario victims fall into this age category (Table 15). However, as Table 15 shows, nearly identical proportions of uncleared homicides in Ontario are found for victims aged 15 to 25 and

those not in that age category (10.6 percent and 9.5 percent respectively). Consequently, the variables are not found to be associated at a statistically significant level (V=.016). Investigating this relationship for New York State reveals that the association between the variables is statistically significant, although the strength of the relationship is negligible (V=.02). Table 16 reveals a slightly greater proportion of uncleared cases where the victim is between the ages of 15 and 25 (46.7 percent) than where the victim does not fall into this age category (44.5 percent), which is likely due to gang- and drug-related activities involving young people in places such as New York City.

Race of the Victim

The most interesting findings in terms of the comparative analysis at this stage emerge with respect to victim race. In Ontario, similar to Canada in general, homicide victims are mainly white (86.3 percent). In terms of clearance, 10.1 percent of homicides involving white victims are uncleared compared to 4.9 percent of homicides where the victim is not white (Table 15). The association between these variables is statistically significant, but the strength is minimal (V=.06). Table 16 reveals that for New York State, there are almost identical proportions of white and non-white victims (49.5 percent and 50.5 percent respectively). These percentages are comparable to those found for the country as a whole. Furthermore, Table 16

TABLE 17
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN ONTARIO BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	975(35.4%)	905 (92.8%)	70 (7.2%)
NON-FIREARM	1778(64.6%)	1593 (89.6%)	185 (10.4%)
CRIMINAL ACT	360(15.6%)	286 (79.4%)	74 (20.6%)
NO CRIM. ACT	1952(84.4%)	1922 (98.5%)	30 (1.5%)

shows the proportions of uncleared homicides in which the victim is white or non-white are also virtually identical (45.7 percent and 45.5 percent respectively). As a result, the association between uncleared homicides and race in New York State is not statistically significant (V=.002). The most interesting finding in terms of this comparative analysis concerns the direction of the influence of the victim's race, which is found to be opposite for Ontario and New York State. In Ontario, there is a greater likelihood of the homicide remaining uncleared where the victim is white. With respect to New York State, however, the likelihood that the case will be uncleared is fractionally greater for non-white than white victims, and thus the opposite is true in this region. These results are possibly a reflection of involvement of the various races in different kinds of murder (as the very nature of a homicide effects the likelihood of clearing a case), which in the case of the U.S. the diverse patterns function to cancel each other out in terms of their impact on clearance.

TABLE 18
FREQUENCY AND PERCENT OF CLEARANCE STATUS IN NEW YORK STATE BY WEAPON AND CIRCUMSTANCES OF OFFENSE

	TOTAL CASES	HOMICIDES CLEARED	HOMICIDES UNCLEARED
FIREARM	20,129(61.8%)	9,879 (49.1%)	10,250 (50.9%)
NON-FIREARM	12,467(38.2%)	7,906 (63.4%)	4,561 (36.6%)
FELONY	6,176(33.9%)	3,529 (57.1%)	2,647 (42.9%)
NON-FELONY	12,047(66.1%)	9,456 (78.5%)	2,591 (21.5%)

Weapon

With respect to weapons used in homicides in Ontario, the findings displayed in Table 17 indicate that 35.4 percent involve a firearm. This figure does not differ substantially from the percentage of 39 found for the country as a whole. Although the strength of the association between the variables is very small (V=.053), it is statistically significant. The impact of the use of a firearm on homicide clearance in Ontario, however, is opposite both to the predicted relationship, and to that which is found for all reported homicides in Canada. More specifically, 10.4 percent of homicides not involving a firearm are uncleared, while 7.2 percent of homicides involving a firearm are uncleared (Table 17). It is possible that a more prevalent use of long guns in family-related homicides occurring in Ontario is rendering the use of firearms in cleared cases more frequent in this region.

Table 18 shows that, similar to homicides reported for the U.S. as a whole, a substantial proportion of homicides

in New York State are committed with a firearm (61.8 percent). The association between the variables of homicide clearance and weapon is much stronger for New York State (V=.14) than for Ontario (V=.05). Moreover, the effect of the use of a firearm on clearing a homicide case in New York State is opposite to that found in Ontario; 50.9 percent of homicides involving a firearm are uncleared, in comparison to 36.6 percent uncleared where the weapon used is not a firearm (Table 18). The direction of this relationship is also opposite to that found for the U.S. in general, but it does support the hypothesized prediction.

Circumstances Surrounding the Offense

The results in Tables 17 and 18 signify that more than twice as many homicides in New York State than Ontario are committed at a time when another criminal offense is in progress (33.9 percent and 15.6 percent respectively). Consistent with all of the findings thus far, the association between the variables of the circumstances surrounding the offense and homicide clearance is found to be the strongest in terms of the five predictor variables. Furthermore, as with all previous analyses, in both regions victims of uncleared homicides are more likely to be killed during the commission of another offense. For Ontario, the findings in Table 17 denote that 20.6 percent of homicides involving a concomitant criminal act are uncleared, in comparison to 1.5 percent uncleared where no other criminal

act took place. For New York State, 42.9 percent of cases involving the commission of another felony are uncleared, as opposed to 21.5 percent of cases uncleared where no other felony occurred when the killing took place (Table 18). The relationship between the circumstances and homicide clearance is stronger in Ontario than New York (V=.33 and V=.22 respectively), although for both regions the strength is moderate. The higher predictive value of the circumstances surrounding the offense in Ontario may be an indication that the types of crimes which are taking place at the time of the killing in that province are intrinsically different from the felony-related murders occurring in New York State, and pose greater difficulties in terms of clearance.

Logistic Regression Results: Ontario and New York State

TABLE 19
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN ONTARIO

VARIABLE	B	S.E.	R	EXP (B)
NO CONCOMITANT CRIMINAL ACT	1.3892**	.1150	.4217	4.0115
CONSTANT	2.7611**	.1150		

**p<.01

The Province of Ontario

The logistic regression analysis for homicides reported in Ontario contains 2215 cases[15]. As was found with respect

[15]559 cases were rejected due to missing data.

to the Maritimes, the model of homicide clearance in Ontario is a good fit only in terms of the circumstances surrounding the offense. For the model including this variable and the constant, an overall percentage of 95.53 cases are correctly classified. In particular, all of the 2116 cleared cases are classified correctly, although none of the 99 uncleared cases resulted in accurate classification. The improvement of adding the circumstances variable to the model containing only the constant is statistically significant. The value for -2LL decreased between the stages of the constant only to the addition of the circumstances variable. Thus, it is possible to reject the null hypothesis that the coefficient for the circumstances variable is 0. The R value of 0.4217 for the circumstances surrounding the homicide suggests that this variable makes a substantial partial contribution to the model (Table 19). The value for Exp (B), which signifies that where a homicide case does not involve the commission of another criminal offense the odds of clearing the case are increased by a factor of 4.01, provides support for the predicted relationship between the circumstances surrounding the case and homicide clearance.

New York State

The logistic regression analysis for homicide clearance in New York State includes 20,779 cases[16]. The results

---

[16]17,978 cases were rejected because of missing data.

suggest that, in general, the model is a better fit in terms of homicide clearance in New York State than Ontario. Although overall the percentage of correctly classified cases is lower for New York State (70.76 percent), 631 of the uncleared cases (12.8 percent) are classified correctly, whereas none of the uncleared cases in Ontario achieved correct classification. 93.86 percent (11,599 cases) of the cleared cases reported for New York State are accurately classified. The value for improvement at each successive stage of model-building is statistically significant. Furthermore, the value for -2LL decreased at each step in building the model. Consequently, the null hypothesis that the coefficients for the predictor variables added at each step, with the exception of the constant, are 0, can be rejected.

The final model, displayed in Table 20, contains four predictor variables. Only the race of the victim does not have a statistically significant effect on the odds of clearing a homicide case. Examining the R values indicates that the circumstances surrounding the offense make the largest partial contribution to the model (R=0.1806). The Exp (B) for this variable suggests that where a homicide does not involve a concomitant felony, the odds of clearing the case are increased by a factor of 1.61. Consequently,

TABLE 20
LOGISTIC REGRESSION RESULTS FOR THE PREDICTION OF HOMICIDE CLEARANCE IN NEW YORK STATE

VARIABLE	B	S.E.	R	EXP (B)
UNDER AGE 10	.3877**	.0978	.0258	1.4736
AGE 10 TO 19	.0168	.0509	.0000	1.0170
AGE 20 TO 29	-.1315**	.0370	-.0227	.8768
AGE 30 TO 49	-.0138	.0368	.0000	.9863
AGE 50 TO 64	.1264*	.0534	.0132	1.1348
OVER AGE 65	-.3856***	N/A	N/A	N/A
NO CONCOMITANT FELONY	.4744**	.0183	.1806	1.6070
FEMALE VICTIM	.2414**	.0251	.0661	1.2730
NO FIREARM USED	.2836**	.0194	.1015	1.3280
CONSTANT	1.0722**	.0301		

*p<.05
**p<.01
***The value of the coefficient for the last category is not displayed in the output, and thus has to be calculated by hand.

it appears that the influence of the circumstances surrounding the offense on homicide clearance is much stronger with respect to homicides reported in Ontario than New York. However, the variables of homicide weapon, age, and gender of the victim are all incorporated in the homicide clearance model for New York State, whereas the model for Ontario contains only the circumstances variable.

The weapon variable makes the next largest partial contribution to the model(R=0.1015). The positive value for B of 0.2836 implies that when a homicide case does not

involve a firearm as the weapon, the odds of clearing the case are increased (by a factor of 1.33, in accordance with the interpretation of the value for Exp (B)). This is consistent with the hypothesized relationship between the homicide weapon and clearance of the case. The partial contribution to the model of the gender of the victim is very small (R=0.0661). However, the value for Exp (B) signifies that a homicide case involving a female victim increases the odds of clearing the case by a factor of 1.27, which supports the hypothesized prediction.

Finally, with respect to the age variable, two of the victim age categories do not have a statistically significant impact on the likelihood of homicide clearance. More specifically, the effect on the odds of clearing a homicide case when the victim's age falls between 10 and 19 and 30 and 49 are not statistically significant in comparison to the average effect of all age categories. The impact on clearance in terms of the victim's age falling between 50 and 64 is statistically significant at a .05 level. Interestingly, the value for Exp (B) for this age category denotes an increase in the odds of clearing the case by a factor of 1.13 when the homicide victim is in this age group, as compared to the average effect of all of the remaining age categories, which is distinct from the logistic regression results for both the U.S. and Canada in general. For the remaining statistically significant age

categories, the odds of clearing a case are increased only where the victim is under 10. The negative values for B for the age categories of 20 to 29 and over 65 signify that where a homicide case involves a victim in one of these age groups, the odds of clearing the case are decreased, as predicted.

CONCLUSION

Chapter 6

Overall, the results suggest that the homicide clearance model achieves the best fit for homicides reported in either Canada or the United States as a whole. When the model is tested for homicides in Canada, all of the predictor variables are incorporated in the final model. Furthermore, the indication that the odds of homicide clearance increase in cases involving particular victim and offense characteristics provides support for all five of the hypotheses tested in this study.

When the model is tested using American homicide data, the only predictor variable excluded from the final equation is the homicide weapon. U.S. homicides overwhelmingly employ firearms as murder weapons. This issue has been the subject of extensive debate in so far as many argue that it is a consequence of rights retained by all U.S. citizens to bear arms. In Canada, on the other hand, although certain guns such as hunting rifles are frequently involved in killings which occur among family members, many of the firearms used in Canadian homicides are illegally obtained. These guns surface in robbery, theft, and other crime-related murders, which are more likely to be uncleared than other homicides. The substantial levels of gun ownership in the United States may result in their use in a variety of homicide types, balancing out their involvement in those

which are more difficult to solve (ie. those that are felony-related). Furthermore, there is evidence to suggest that the proportion of spousal homicides in the U.S. involving firearms has increased (Silverman and Kennedy, 1993). As a result of a lack of variation in the use of guns in U.S. homicides, the weapon does not predict the likelihood of homicide clearance. Thus, the volume of gun ownership in the U.S. may provide a partial explanation as to the statistical non-significance of the murder weapon as a predictor of homicide clearance in that country.

For both countries, the circumstances surrounding the offense have the greatest impact on the odds of clearing a homicide. This is consistent with the findings of Riedel and Rinehart (1994), whose study of uncleared homicides in Chicago indicates that non-felony murders are cleared considerably more often than murders involving concomitant felonies. Moreover, the increase in the odds of clearing the case where no other criminal act occurred at the time of the killing is similar for the two countries. Furthermore, in both instances the predicted relationship between the variables is supported. Thus, the much higher proportion of U.S. homicides involving the perpetration of another criminal offense than in Canada is most likely causing their significantly greater uncleared rates. The difficulty of clearing the case posed by murders transpiring between individuals unknown to one another, as is frequently the

case when another criminal act is involved, is likely largely an issue of the availability of information concerning the identification of a suspect.

The likelihood of homicide clearance in both Canada and the U.S. in general does not appear to be significantly affected by the gender of the victim. The odds of clearing a case where the victim is female are increased in Canada and the U.S. by a factor of 1.3 and 1.15 respectively[17]. Thus, the hypothesis that males are more likely to be victims of uncleared homicides received little support. However, there are reasons to suggest that the proportion of females who are victims in homicides involving strangers or acquaintances may be rising, which may in turn increase the number of women who are victims in uncleared homicides[18]. Research examining the relationship between the changing sex-roles of women and the risk of female homicide victimization suggests the possibility of women's more frequent exposure as potential victims today than in the past (Gartner, 1990; Gartner, Baker, and Pampel, 1990; Smith, 1987). Routine activities theory suggests that for the occurrence of most criminal activity, it is necessary

---

17

Where the factor in the Exp (B) column is equal to one, the odds of homicide clearance are unchanged.

18

Since the Canadian data only go up to 1983, it is not possible to determine whether the percentage of male and female victims in uncleared homicides is continuing to converge in the 1990's.

for a motivated offender, suitable target, and an absence of capable guardians to converge in time and space (Cohen and Felson, 1979). It is conceivable that the movement of women out of the domestic sphere into the public domain resulting from the women's movement in the late 1960's may have increased their likelihood of becoming victims of homicides by strangers or acquaintances. This is consistent with Riedel's suggestion that situations ripe for direct-contact predatory violations, particularly by strangers, will likely increase where activities take people out of their household or away from their primary groups (Riedel, 1995c). As these types of homicide are inherently more difficult to solve, a rise in the proportion of females who are victims in these sorts of cases may consequently increase their likelihood of becoming a victim of an uncleared homicide.

Although Verkko (1967) claims that female homicide victimization remains stable across countries, and within countries over time, more recent research has failed to demonstrate support for his static and dynamic "laws" of sex and homicide. Wilbanks' direct test of the sex "laws" reveals that female homicide victimization rates vary considerably both over time and across countries (Wilbanks, 1981). Other research has suggested that the gender gap between males and females in homicide victimization has decreased as a result of the movement of women into non-traditional roles, in situations of low female status

(Gartner, Baker, and Pampel, 1987; Gartner, Baker, and Pampel, 1990). What is needed is for these studies to be taken one step further, to determine whether variation in victimization rates are occurring predominantly within one category of victim/ offender relationship, such as strangers, which are more difficult to clear. For example, according to Silverman and Kennedy (1987), homicide trends in Canada indicate a growing frequency of female victims of male strangers and a corresponding decline of female victimization by spouses.

The results for both countries as a whole generate support for the prediction that victims of uncleared homicides are more likely to be white. However, this is much more the case in Canada than in the U.S. In the U.S., the increase in odds is very tenuous, such that the likelihood of homicide clearance is only slightly distinguishable by the race of the victim. The findings with respect to race and homicide clearance in the U.S. for this study are however consistent with the research of Cardarelli and Cavanagh (1992), who found African-American victims to have a slightly smaller percentage of uncleared homicides than white victims.

Although in both Canada and the U.S. the relationship under investigation concerns the hypothesis that white victims are disproportionately represented among uncleared homicides, the race of the victims composing the non-white

category is very different for the two countries. In Canada, the majority of non-white victims are Native Canadians, whereas in the U.S., the category of non-white victims is overwhelmingly made up of African-Americans. Differences in homicide patterns have been noted for Native Canadians and the African-American population, and these divergent trends have necessary consequences for patterns of homicide clearance in terms of race. Homicides among Native Canadians occur predominantly on reserves between family members, which poses little difficulty in terms of identifying the perpetrator (Silverman and Kennedy, 1995). Furthermore, other research concerning homicides among aboriginals in Ontario denotes that 90.4 percent of aboriginal victims murdered on reserves are the victim of an individual listed by police as having an "on-reserve" address (Doob, Grossman, and Auger, 1994). Homicides among African-Americans do not produce a similar pattern to the Native Canadians; the data in this case indicate that a substantial proportion of African-American victims are killed by friends and acquaintances (42.2 percent). Furthermore, fewer African-Americans than whites are killed at the hands of a family member (13.7 percent compared to 17.6 percent). This is consistent with the findings of Riedel, Zahn, and Mock (1985), whose study of American homicide reveals that African-Americans compose the majority of victims in murders occurring between acquaintances,

whereas the majority of victims in both family and stranger homicides are white. Thus, the disproportionate presence of white victims in both those homicides most easily cleared by arrest (family-related murders) and those which are more difficult for police to clear (stranger murders) may create a contradictory effect that functions to reduce the influence of the race variable as a predictor of uncleared homicides in the U.S.

The age distribution of homicide victims in Canada and the U.S. met expectations generated from previous homicide research. For both countries, the results suggest that the odds of clearing a homicide are increased where the victim is under the age of 10. Nevertheless, this increase in odds is greater for homicides reported in Canada than for those reported in the U.S. This finding suggests the possibility of cultural factors influencing homicide patterns. More specifically, previous research on child homicide victims proposes the existence of distinct trends according to the victim's race. For example, in a comparison of murdered children under age 14 in Ontario and Chicago, Silverman, Riedel, and Kennedy (1990), suggest that the homicides of African-American children may be composed of two discernable types. One of these concerns gang activity; "...the findings that older Black children were often killed by nonfamily members who were known to them and who used handguns certainly points in the direction of youth

conflict," (Silverman, Riedel, and Kennedy, 1990:413). As was discussed previously, the nature of gang homicides may hinder the identification of a suspect. Thus, the high rate of homicides of African-American children, and the potentially distinct nature of homicide incidents involving some African-American children, may counteract the generally solvable nature of homicides involving child-aged victims, resulting in a smaller increase in the odds of homicide clearance in the U.S.

The higher clearance rates overall for victims under 10 compared to the remaining age groups is likely due to the lifestyle, limited interaction, and consistent presence of guardians which characterizes the early stages of life for most North Americans. As Cardarelli and Cavanagh (1992) suggest, children younger than ten have a much greater probability of coming under the constant surveillance of a caretaker, making them considerably less likely to be the murder victim of a stranger. The routine activities of young children thus may substantially reduce their chances of being killed by someone unknown to them in comparison to the remaining age groups who, having attained more freedom, are more vulnerable to stranger victimization.

For both countries the results reveal that the odds of clearing a homicide case are decreased when the victim is between the ages of 20 and 29, 30 and 49, and 65 and over. The likelihood of a homicide remaining uncleared in the case

of an elderly victim is greater in the U.S. than Canada. It was hypothesized that victims over the age of 65 would be disproportionately represented among victims of uncleared homicides on the basis of evidence indicating a high involvement of this age group as victims in theft- and robbery-related homicides. If this relationship holds true, the much larger number of homicides in the U.S. which occur during a concomitant felony may account for the greater predictive value of this victim age group for homicide clearance in the United States.

The decreased odds in both countries of clearing a homicide in cases involving victims aged 20 to 29 and 30 to 49 may be a reflection of the high level of contact with strangers which characterizes the routine activities of many individuals in their early to mid-adulthood. The high rates of divorce and large numbers of single-parent households which have become increasingly typical of modern day society may decrease the levels of guardianship experienced by individuals in these age categories, putting them at greater risk of becoming a homicide victim of someone unknown to them, making it more difficult to clear the case. To examine this and other possible explanations further, future research on uncleared homicides should investigate the homicide patterns of victims aged 20 to 49 in terms of factors such as victim-offender relationships, victim marital status, and location of the offense.

When two demographically similar regions, the Maritimes and four New England States, were compared with respect to the homicide clearance model, fewer of the predictor variables were found to be statistically significant than when both countries as a whole were examined. For the Maritimes, only the circumstances surrounding the offense emerged as a statistically significant predictor variable, whereas for the New England States, both the circumstances surrounding the offense and victim race were found to have an impact on the likelihood of clearing a homicide case. The circumstances surrounding the homicide were found to have a greater impact on the odds of clearing a case in the Maritimes than in the New England States. The finding that almost twice as many homicides reported in the New England States involve a concomitant criminal act may be an indication of a more frequent occurrence of particular types of felony-related murders in this region. Previous research indicates that not all crime-related killings pose the same difficulty to police in terms of clearance (Riedel and Rinehart, 1994). For example, many sex-related homicides go undetected for a period of time until the dumped body is discovered, making it harder for police to determine who is the perpetrator. Thus, it may be a distinction in the nature of the offenses preceding killings occurring in the New England States and the Maritimes which is giving the circumstances surrounding the offense a higher predictive

value in the latter than the former. To probe this possibility further, future research should consider a closer examination of the types of crime-related homicides which are occurring in the various regions, as well as a more qualitative assessment of the success of investigations of the different kinds of crimes which result in fatalities.

More interesting is the finding that race is included in the final homicide clearance model for the New England States but not for the Maritimes. This deserves particular attention in light of the effort made at this stage of the analysis to examine demographically similar areas. The results of the logistic regression analysis for the New England States indicate that in homicide cases where the victim is white the odds of clearing the case are increased. Thus, the influence of the race variable in the New England States is opposite both to the predicted relationship and to the findings for the U.S. as a whole. The racial issue in terms of homicide in the United States is essentially an African-American versus white comparison. In selecting a region for examination in which the African-American population is minimal, the influence of the race variable, which strongly effects homicide trends and patterns for the U.S. in general, is removed. This is confirmed by the finding that 90 percent of homicide victims in this region are white, as compared to 52.5 percent for the U.S as a whole. It is feasible that the low level of African-

American homicide victimization in the four New England States generates little concern among law enforcement officers who, in turn, devote greater attention and manpower (possibly as a result of public pressure) to homicide solutions in cases of white victims. The highly outnumbered African-American population in these states likely cannot create similar demands on police personnel or initiate public outcries to centre resources on solving the case of an African-American homicide victim. Consequently, cases where the victim is white become a priority, leading to a greater likelihood of their clearance. Another possibility concerns the notion that the African-American and white populations in these four states are involved in different types of homicides. However, when white and non-white victims are examined with respect to their involvement in felony- and non-felony-related homicides, it is discovered that virtually identical proportions of each race are found in the two circumstances categories. Nevertheless, future research could pursue this issue by examining race patterns in terms of victim-offender relationships for these four New England States. Smaller numbers of African-American homicide victims compared to whites in family-related murders in this region, for example, may be increasing the odds of homicide clearance in cases involving white victims.

The absence of the race variable from the final model of homicide clearance in the Maritimes may be in part due

to the lower level of homicides involving a concomitant criminal act in this region than in the country as a whole. This pattern is consistent with research noting an association between densely populated cities (a feature which does not predominate in the Maritimes) and "more anonymous forms of homicide", such as offenses involving acquaintances and strangers (Williams and Flewelling, 1988). In Canada, robbery, theft, and sexual-offense-related homicides are overwhelmingly committed against whites (see, for example, Silverman and Kennedy, 1993). This pattern, coupled with the indication that these types of homicides are more difficult to solve, is probably causing race to impact on homicide clearance where provinces with large metropolitan cities, such as Quebec, Ontario, and British Columbia, are included in the analysis. Fewer of these types of murders occurring in the Maritime provinces may thus reduce the influence of race as a distinguisher of cleared and uncleared homicide cases. Furthermore, there is not a preponderance of drug or gang activity in the Maritimes, in which more whites than Natives are generally implicated, which may also reduce the disparity between the two races in terms of homicide clearance. Finally, as was noted earlier, the minute Canadian Indian population in this region produces little variation by race in the Maritimes, which in turn effects the utility of making predictions on the basis of race.

The insignificance of gender in either region may be an indirect effect of female emancipation, as was discussed in terms of homicide clearance for both countries as a whole. The possibility exists that this explanation would carry even more weight in regions characterized by smaller proportions of working-class women, as it has been repeatedly suggested that the ideology and benefits inherent in the women's movement have largely bypassed working-class women, many of whom are minority background. Moreover, working-class women employed outside the home is not a recent phenomenon, and thus it is doubtful that increased opportunities in the labour force have changed the lifestyles of these women significantly (see, for example, Smart, 1979). Thus, if the emancipation theory holds any water, its effects in terms of increasing victimization rates are more likely to be seen in areas typified by middle-class women, since the lifestyles of these women are more likely to have been altered as a result of emancipation. The current research does not permit an examination of the occupation or socio-economic status of homicide victims, but future research should consider the inclusion of such variables. Alternatively, provinces and states could be analysed with respect to a breakdown of socio-economic classes and compared with their various effects of gender on homicide clearance.

The weapon variable was absent from the homicide

clearance models for both regions. In more than half of the homicides reported for the four New England States, a firearm was the weapon used. Thus, as is suggested to be the case for the U.S. as a whole, it is likely that the use of guns is spread across the various types of homicides instead of being disproportionately represented in murders occurring amidst other illegal activity. This lack of variation renders predictions on the basis of homicide weapon fruitless. The basis of the insignificance of the murder weapon as a predictor of homicide clearance in the Maritimes is less clear. It could be the case that there is a high use of long guns in murders occurring in this region. Due to their availability, hunting rifles and other long guns are known to be involved in large numbers of killings among family members (see, for example, Gillis, 1986). Thus, future research should investigate the possibility that higher levels of legal gun ownership exist among Maritimers, counteracting the disproportionate use of handguns and other illegal firearms in homicides involving strangers.

Age does not appear to be an important predictor of homicide clearance in either the Maritimes or the New England States. This may in part be due to the finding that both regions have fewer crime-related homicides than their respective countries in general. Previous research on homicide clearance has proposed the possibility of an

interaction occurring between the age of the victim and the circumstances surrounding the offense, such that older individuals have a greater likelihood of becoming a victim in a homicide which is more difficult to clear (Riedel and Rinehart, 1994). Thus, fewer crime-related killings may reduce the proportion of elderly victims killed during the commission of offenses such as thefts and robberies, reducing the significance of this age category in terms of its impact on the odds of clearing the case.

In the comparative analysis of homicide clearance in Ontario and New York State, the findings suggest that the homicide clearance model for Ontario is only a good fit with respect to the circumstances surrounding the offense. For New York State, all of the variables are incorporated in the model, with the exception of victim race. The odds of clearing a case which involves the commission of another criminal act were increased by a substantially greater factor for homicides reported in Ontario than New York State. The percentage of crime-related homicides in New York State is over double that of Ontario, and higher than the U.S. national average. In fact, one of every three homicides reported in New York State occurred during a concomitant felony. However, nearly one in two homicides in New York State are uncleared. Therefore the difficulties posed to New York State Police Departments with respect to solving homicide cases are clearly not limited to those

which are crime-related. Future research on uncleared murders should more closely scrutinize the homicide patterns and police investigative activities of large U.S. cities, such as New York and Los Angeles, which are likely driving the high uncleared rates of some states.

Most interesting is the finding that the race of the victim was not incorporated in the final model for either Ontario or New York State. The absence of victim race in the Ontario model may in part be a reflection of lower percentages of non-white victims in this province than in Canada as a whole. The hypothesized relationship between the race of the victim and homicide clearance in Canada draws on evidence of Native Canadian victim homicide trends. These killings are largely intraracial, and occur on Native reserves (Silverman and Kennedy, 1993; 1995). These factors suggest that homicides involving Natives are more easily cleared, thus leading to the prediction that victims of uncleared homicides are more likely to be white. In the absence of high rates of murders of Canadian Indians in Ontario, the positive influence on homicide clearance by this group is reduced, rendering the race variable insignificant. Future research should consider investigating the effects of the race of the victim on the odds of clearing a homicide case in various metropolitan areas across Canada, as previous research has indicated that Canadian Indian murder rates vary substantially across urban

centres of Canada (Silverman and Kennedy, 1993).

Another intriguing finding concerns the absence of the race variable in the homicide clearance model for New York State, particularly since its impact is statistically significant for the model of U.S. homicides. Moreover, the proportion of white homicide victims in New York State does not differ substantially from that found for the U.S. as a whole. It is possible that there are two different phenomena operating here which function to cancel each other out, thus making race an insignificant predictor of homicide clearance in New York State. To begin with, there may be important implications in the noted trend of increasing levels of stranger homicides in U.S. urban centres (Williams and Flewelling, 1988). Previous research has indicated high proportions of white victims in stranger homicides (Riedel, Zahn, and Mock, 1985; Silverman and Kennedy, 1993; Wilbanks, 1984). If, as Riedel (1995c) suggests, homicides between strangers are more difficult for police to solve, this pattern suggests a greater likelihood of a homicide remaining uncleared where the victim is white. Thus, increasing rates of stranger homicides may function to compound the already greater probability of victims of uncleared homicides being white.

On the other hand, the high homicide rate in New York State may be a reflection of substantial levels of social disorganization believed to characterize large urban areas

such as New York City. The African-American population living in big U.S. cities are frequently exposed to economic deprivation, discrimination, and the discontent which plagues most inner-cities (Silverman and Kennedy, 1993). While it has been suggested that these factors may contribute to our understanding of the correlation between race and homicide, it is also plausible that there is a high tolerance of such social disorganization in African-American communities. Consequently, elevated levels of violent crime in such neighbourhoods may not generate concern among law enforcement agencies or the wider society equivalent to what would transpire should the offenses have occurred in a "white neighbourhood". As a consequence, cases involving African-American homicide victims may more often go uncleared. Thus, if two unique patterns are operating in terms of African-American and white homicide victims, their combined effect may nullify any increased likelihood of clearing murder cases for one race or the other. As suggested by Cardarelli and Cavanagh (1992), an important area of future research on uncleared homicides concerns patterns occurring in the diverse communities of which large cities are composed, the findings of which may support or refute this potential explanation.

The remaining variables of weapon, victim age and gender incorporated in the homicide clearance model for New York State all provide support for the hypothesized

predictions. The results of the logistic regression analysis for this state provide that in homicides where the victim is female, or the weapon used is something other than a firearm, the odds of clearing the case are increased. When the victim is over the age of 64, there are decreased odds of homicide clearance. It is assumed that the occurrence of these relationships is largely due to the reasons discussed in the predictor model.

These same variables were not incorporated in the homicide clearance model for Ontario. The finding that the likelihood of homicide clearance in this province is not distinguishable on the basis of gender may be the result of homicide trends in the large metropolitan areas like Toronto and Hamilton, where high levels of mobilization, single-parent households, and anonymity may put females at a greater risk of stranger homicide victimization than in provinces characterized by more rural communities. As noted by Cardarelli and Cavanagh (1992), there is a greater occurrence of interaction with strangers during everyday routine activities in large urban areas than in smaller rural or suburban locations. Ontario is also distinct from provinces such as Quebec, where high levels of gangland killings, which for the most part involve male victims, leave large numbers of homicides uncleared.

The weapon used in a homicide and the age of the victim do not appear to be important predictors of homicide

clearance in Ontario. The observation that the use of a firearm does not affect the odds of clearing a homicide in either Ontario or the Maritimes is consistent with the findings of Silverman and Kennedy (1995), who found variations in clearance rates by weapon only for Quebec. Thus, the indication that victims of uncleared homicides are more likely to be killed with a firearm found for murder reported in Canada as a whole may be due to the prevalence of gang-land killings in Quebec. The province of Quebec, according to Silverman and Kennedy, drives Canada's uncleared rate. This hypothesis is supported by research claiming that more gang than nongang homicides involve guns (Bailey and Unnithan, 1994; Maxson, Gordon, and Klein, 1985).

Although the variable created of victims aged 15 to 25 was not included in any of the logistic regression analyses, it was relatively clear from the cross tabulations that this age group did little to distinguish between cleared and uncleared homicides. This finding is surprising in light of evidence suggesting a high proportion of youth conflict involving individuals not well-known to one another, and that it is becoming increasingly gang- and drug-related. It is possible that broadening this age category to encompass victims up to the age of 30 may increase the statistical significance of this variable as a predictor of homicide clearance, particularly in light of research indicating that

in both gang and nongang homicides, the mean age of victims is higher than that of offenders (Bailey and Unnithan, 1994; Maxson, Gordon, and Klein, 1985). Furthermore, analyses of particular cities, states, or provinces known to be afflicted by high levels of gang violence (such as Los Angeles and Montreal) may provide greater support for the hypothesized relationship between victims in their youth or young adulthood and homicide clearance. Future research should consider approaching the topic from such angles.

As was discussed earlier, fairly or not, clearance rates are often equated with police effectiveness. The recent upward trend in uncleared rates for homicide and other serious violent offenses has resulted in a great deal of pressure and criticism aimed at law enforcement agencies across Canada and the United States. However, the implications of the current findings suggest that these accusations may be premature. The logistic regression results for each of the three situations (Canada versus the United States; the four Maritime Provinces versus four New England States; and Ontario versus New York State) all signify that the odds of clearing a case are, for the most part, substantially affected by whether or not the homicide is crime-related. The high uncleared rates for these types of cases is likely not a matter of poor police investigation practices, but, as Riedel (1994) has proposed, the unavailability of information directed to the identification

of a suspect. The ability of police to make an arrest in such cases is often dependent upon the willingness of witnesses, police informants, and the public at large to provide them with helpful knowledge about an offense known to have been committed. Thus, alterations to police investigative practices as a solution to low clearance rates will likely be futile. To boost clearance rates, action must be taken which precedes the commission of the offense in the first place. For example, stricter gun legislation may lessen the use of firearms in robberies, leading to fewer robbery homicides. Although in some cases other variables, such as victim race, gender, and age, are found to influence the odds of clearing a homicide case, it is clear that the circumstances surrounding the offense harbour the greatest influence, regardless of the area or region under investigation. Furthermore, there is some evidence to suggest that the relative increase of felony-related homicides is much greater than for nonfelony homicides (Rushforth et al., 1977; Wilbanks, 1984; Zimring and Zuehl, 1986). I would argue that the implications of these findings in terms of the effectiveness of police investigations are highly significant, as the factors obstructing police from solving these murders are generally beyond their control, and increases in crime-related homicides may lower clearance rates where no simultaneous changes in the performances of law enforcement agents have

occurred. Riedel (1995b) suggests that difficulties posed to police in clearing offenses by arrest may extend beyond homicide to other serious violent offenses such as rape and assault. Future research examining clearance patterns with respect to these other forms of crime may assist in determining how reasonable it is to point the finger at police when clearance rates decline.

The regional analyses carried out during the second and third stages of the research also have implications for the proposed relationship between police practices and clearance rates. The final logistic regression models for the four Maritime Provinces, the four New England States, Ontario, and New York State all included different sets of predictor variables from the models which incorporated all cases reported in Canada and the United States. This finding suggests that the difficulties posed to police in clearing homicide cases may not be consistent across the two countries. Certain victim and offense characteristics impact on the likelihood of homicide clearance in some areas but not others. For example, while victim gender emerged as a statistically significant predictor variable for the U.S. as a whole and New York State, it is not included in the final model for the four New England States. The analyses at the regional levels also revealed that particular characteristics of the victim and the offense sometimes impact on the odds of clearing a case in opposite ways to

what occurs when the country as a whole is examined. For instance, this emerged with respect to the impact of victim race on homicide clearance for the U.S. in general and the four New England States. Rather than a reflection of police officers' ability to investigate a homicide case with enough efficiency to pinpoint a suspect in the case, these diverging predictor models of homicide clearance are likely a reflection of diverse patterns concerning the nature of homicides in the various regions of Canada and the United States. Consequently, solutions seeking to better clearance rates of police forces will be less effective when approached from a universal standpoint, since all police operations do not appear to be facing identical problems in solving the crimes committed within their jurisdictions. Regional-specific, or better still city-specific, approaches should be taken to both understanding and improving the recent decline in homicide clearance rates occurring in Canada and the United States.

REFERENCES

Antunes, G.E., and A.L. Hunt. 1973. "The Impact of Certainty and Severity of Punishment on Levels of Crime in American States: An Extended Analysis." Journal of Criminal Law, Criminology, and Political Science 64:486-493.

Bailey, Gary W., and N. Prabha Unnithan. 1994. "Gang Homicides in California: A Discriminant Analysis." Journal of Criminal Justice. Vol.22, No.3:267-275.

Baumer, Eric. 1994. "Poverty, Crack, and Crime: A Cross-City Analysis." Journal of Research in Crime and Delinquency 31(3):311-327.

Black, Donald J. 1970. "Production of Crime Rates." American Sociological Review 35:733-748.

Block, C.R. 1986. Homicide in Chicago: Aggregate and Time Series Perspectives on Victim, Offender, and Circumstances (1965-1981). Chicago: Loyola University of Chicago.

Blumstein, A. 1995. "Violence By Young People: Why the Deadly Nexus?" National Institute of Justice Journal No.229(August):2-9.

Blumstein, A., and H.J. Heinz III. 1995. "Youth Violence, Guns and the Illicit-Drug Industry." Proceedings of the Third Annual Spring Symposium of the Homicide Research Working Group. Georgia.

Browne, A., and R. Flewelling. 1986. "Women as Victims or Perpetrators of Homicide." Paper presented at the Annual Meeting of the American Society of Criminology. Atlanta. November.

Cardarelli, Albert, and David Cavanagh. 1992. "Uncleared Homicides in the United States: An Exploratory Study of Trends and Patterns." Presented at the Annual Meeting of the American Society of Criminology. New Orleans.

Cohen, L.E., and M. Felson. 1979. "Social Change and Crime Rate Trends: A Routine Activity Approach." American Sociological Review 44, no.4:588-608.

Curtis, L.A. 1974. Criminal Violence: National Patterns and Behavior. Lexington, MA: Lexington Books.

Doob, A.N., M.G. Grossman, and R.P. Auger. 1994. "Aboriginal Homicides in Ontario." Canadian Journal of Criminology 36(1):29-62.

Farley, Reynolds. 1980. "Homicide Trends in the United States." Demography 17(2):177-188.

Fox, James Alan. 1994. "Uniform Crime Reports [United States]: Supplementary Homicide Reports, 1976-1992". ICPSR version. Boston MA: Northeastern University, College of Criminal Justice [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].

Gartner, R. 1990. "The Victims of Homicide: A Temporal and Cross-National Comparison." American Sociological Review 55, no.1:92-106.

Gartner, R., K. Baker, and F. Pampel. 1990. "Gender Stratification and the Gender Gap in Homicide Victimization." Social Problems 37, 4:593-612.

Gartner, R., K. Baker, and F. Pampel. 1987. "The Sex Differential in Homicide Victimization." Paper presented at the Annual Meeting of the American Society of Criminology. Montreal. November.

Gillis, A.R. 1986. "Domesticity, Divorce and Deadly Quarrels: An Exploratory Study of Integration-Regulation and Homicide." in T. Hartnagel and R. Silverman, eds., Critique and Explanation: Essays in Honor of Gwynne Nettler. New Brunswick, N.J: Transaction.

Greenwood, P.W. 1970. An Analysis of the Apprehension Activities of the New York City Police Department. New York: The New York City RAND Institute.

Greenwood, P.W., J.M. Chaiken, and J. Petersilia. 1977. The Criminal Investigation Process. Lexington: The RAND Corporation.

Hazlett, M., and T. Tomlinson. 1987. "Females Involved in Homicides: Victims and Offenders in Two U.S. Southern States." Paper presented at the Annual Meeting of the American Society of Criminology. Montreal. November.

Lundsgaarde, H.P. 1977. Murder in Space City: A Cultural Analysis of Houston Homicide Patterns. New York: Oxford University Press.

Marche, G.E. 1994. "The Production of Homicide Solutions: An Empirical Analysis." American Journal of Economics and Sociology 53/4:385-401.

Maxfield, Michael. 1989. "Circumstances in Supplementary Homicide Reports: Variety and Validity." Criminology 27:671-695.

Maxfield, Michael. 1988. "Homicide Circumstances, 1976-1985: A Taxonomy Based on Supplementary Homicide Reports." Paper presented at the Annual Meeting of the American Society of Criminology. Chicago. November.

Maxson, C.L., M.A. Gordon, and M.W. Klein. "Differences Between Gang and Nongang Homicides." Criminology 23:209-222.

Miller, L. 1983. "Murder in Illinois: 1973-1982." Chicago: Illinois Criminal Justice Authority (Order no.84-18).

Norusis, Marija J. 1993. SPSS for Windows Advanced Statistics Release 6.0. Chicago: SPSS Inc.

Reiss. A. 1971. The Police and the Public. New Haven: Yale University Press.

Riedel, M. 1995a. "Questions and Answers About Murder." McGraw-Hill.

Riedel, M. 1995b. "Getting Away With Murder: An Examination of Arrest Clearances." Proceedings of the Third Annual Spring Symposium of the Homicide Research Working Group. Georgia.

Riedel, M. 1995c. "Toward A Theory of Stranger Violence." Unpublished Paper. Southern Illinois University.

Riedel, M. 1994. "Violence, Homicides, and Clearances: Third Parties as Informants." Unpublished Paper.

Riedel, M. 1993. Stranger Violence: A Theoretical Inquiry. New York: Garland Publishing Co.

Riedel, M. 1987. "Stranger Violence: Perspectives, Issues, and Problems." Journal of Criminal Law and Criminology 78:223-258.

Riedel, M., and R.K. Prxybylski. 1993. "Stranger Murders and Assault: A Study of a Neglected Form of Stranger Violence." in Homicide: The Victim/Offender Connection. ed. A.V. Wilson. Cincinnati: Anderson Publishing Co.

Riedel, M., and T.A. Rinehart. 1994. "Clearances, Missing Data, and Murder." Paper presented at the Annual Meeting of the Academy of Criminal Justice Sciences. Chicago.

Riedel, M., M.A. Zahn, and L.F. Mock. 1985. The Nature and Patterns of American Homicide. Washington, D.C.: U.S. Department of Justice.

Rinehart, T.A. 1994. "An Analysis of Murder Clearances in Chicago: 1981-1991." M.A. thesis. Carbondale: Southern Illinois University.

Rushforth, N.B., A.B. Ford, C.S. Hirsch, N.M. Rushforth, and L.A. Adelson. 1977. "Violent Death in a Metropolitan County." The New England Journal of Medicine 297(10): 531-538.

Silverman, Robert A., James J. Teevan, and Vincent F. Sacco. 1996. Crime in Canadian Society. 5th ed. Toronto: Harcourt Brace.

Silverman, Robert A., and Leslie W. Kennedy. 1995. "Uncleared Homicides in Canada and the United States." Paper presented at the Annual Meeting of the Homicide Research Working Group. Ottawa.

Silverman, Robert A., and Leslie W. Kennedy. 1993. "Interpersonal Relationships and Means of Lethal Violence in Canada." in Homicide: The Victim/Offender Connection. ed. A.V. Wilson. Cincinnati: Anderson Publishing Co.

Silverman, Robert A., and Leslie W. Kennedy. 1987. "Relational Distance and Homicide: The Role of the Stranger." Journal of Criminal Law and Criminology 78:272-308.

Silverman, Robert A., and Leslie W. Kennedy. 1993. Deadly Deeds: Murder in Canada. Toronto: Nelson, Canada.

Silverman, Robert A., Marc Riedel, and Leslie W. Kennedy. 1990. "Murdered Children: A Comparison of Racial Differences Across Two Jurisdictions." Journal of Criminal Justice 18:5.

Skogan, W.G. and G.E. Antunes. 1979. "Information, apprehension, and deterrence: Exploring the limits of police productivity." Journal of Criminal Justice 7:217-241.

Smart, C. 1979. "The New Female Criminal: Reality or Myth?" British Journal of Criminology 19(1):50-59.

Smith, M.D. 1987. "Changes in the Victimization of Women: Is There a 'New Female Victim'?" Journal of Research in Crime and Delinquency 24, no.4:291-301.

Sproule, Catherine F. and Deborah J. Kennett. 1989. "Killing with Guns in the USA and Canada 1977-1983: Further Evidence of the Effectiveness of Gun Control." Canadian Journal of Criminology (July):245-251.

Statistics Canada. 1995. Projections of Visible Minority Population Groups, Canada, Provinces and Regions, 1991-016.Ottawa: Supply and Services Canada. Catalogue number 91-541-XPE.

Statistics Canada. 1992. Age, Sex and Marital Status. Ottawa:Supply and Services Canada. 1991 Census of Canada. Catalogue number 93-310.

Statsky, William P. 1985. West's Legal Thesaurus/Dictionary. St. Paul: West Publishing Co.

Strang, Heather. 1991. Homicides in Australia 1989-90. Canberra: Australian Institute of Criminology.

U.S. Bureau of the Census. 1995. Statistical Abstract of the United States:1995 (115th edition). Washington: Bernan Press.

Verkko, Veli. 1967. "Static and Dynamic 'Laws' of Sex and Homicide. in Studies of Homicide. ed. Marvin Wolfgang. New York: Harper and Row. 36-44.

Wilbanks, W. 1981. "A Test of Verkko's Static and Dynamic 'Laws' of Sex and Homicide." Interpersonal Journal of Women's Studies 4:173-180.

Wilbanks, W. 1984. Murder in Miami. New York: University Press of America.

Williams, Kirk, and Robert L. Flewelling. 1988. "The Social Production of Criminal Homicide: A Comparative Study of Disaggregated Rates in American Cities." American Sociological Review 53:421-431.

Wilson, Nanci K. 1993. "Gendered Interaction in Criminal Homicide." in Homicide: The Victim/Offender Connection. ed. A.V. Wilson. Cincinnati: Anderson Publishing Co.

Wolfgang, M.E. 1958. Patterns in Criminal Homicide. Philadelphia: University of Pennsylvania Press.

Zahn, Margaret A., and P.C. Sagi. 1987. "Stranger Homicides in Nine American Cities." Journal of Criminal Law and Criminology 78:377-397.

Zimring, F.E. and J. Zuehl. 1986. "Victim Injury and Death in Urban Robbery: A Chicago Study." Journal of Legal Studies XV(January):1-40.